The Builder.

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*The Early Records of Wells Cathedral.**

TO the majority of those who have visited the Cathedral cities of England, Wells will probably have a prominent place in the memory, both for the beauty of its Cathedral and surrounding buildings, and its position at the foot of the Mendips. Like Chichester and Hereford, Wells was a foundation of Secular Canons, and much of the disturbing element in the history of its growth was due to the rivalry between it and the monastic institutions of Bath and Glastonbury.

For many years the documentary evidence relating to the Cathedral lay in the library, and the Registry of the Chapter is described as "a mass of parchments almost wholly without arrangement and in various stages of preservation" by the Historical MSS. Commission in 1870. Ten years later they were examined by Mr. W. de Gray Birch, cleaned and catalogued, and some of these documents, together with one in the Archbishop's Library at Lambeth Palace, entitled "Ordinale et Statuta Ecclesiæ Cathedralis Wellensis," were given by Mr. H. E. Reynolds in his work on Wells Cathedral. A few years more saw the complete cataloguing by the late Rev. J. A. Bennett of all "The Registers, Rolls, and Indenture Books," published by the Historical MSS. Commission in 1885. Such is a general outline of the introductory note given by Canon Church in his work on the "Early History of the Church of Wells"—a work dealing with the history of the fabric, and the doings of its Chapter, from the early days of Giso to the middle of the fourteenth century, covering perhaps the most interesting period in the rise of the Chapter and the Church. Canon Church has here brought together in an extended form, papers originally contributed to "Archæologia" on Bishops Reginald, Savaric, Jocelin, and Roger, with additional chapters on the time of Bishop Robert, the Chapter of Wells in the latter part of the thirteenth and the early part of the fourteenth centuries, and an account of the arrangement of the Church at that period, drawn from the documents already referred to, and others, and from the evidence given by the building itself.

In his early pages Canon Church traces the growth of the Cathedral Chapter during the eleventh and twelfth centuries, and adds, "from henceforth gradually the Canons of the Cathedral Church became a distinct corporation, with a head in the person of the Dean, at first appointed by the Bishop, soon afterwards chosen by the Canons. All the Canons and dignitaries were appointed by the Bishop. But whereas hitherto the Bishop had been the head of his Canons, as an Abbot was the head of his Monks, now by degrees the Chapter became a separate body, with interests and possessions of its own, distinct from those of the Bishop—a corporate body entitled the 'Dean and Chapter,' to whom was committed the home government of the Cathedral Church." We have in the pages that follow what record there is of the rebuilding of the church by Bishop Robert (1136-1166), "the starting-point for all inquiries into the architectural history of the present church." Nothing remains of the Saxon church at Wells, or of anything which would be likely to date before the latter portion of the twelfth century, and unless the design was much advanced for its date, the consecration of the building in 1148 could hardly refer to any part of the present building. In this we must rather agree with the late Professor Freeman when he said that "whatever was built in the days of Robert has utterly vanished." Perhaps the clearest evidence of this is to be seen in the north porch of the Cathedral, with its curious ornament, so strongly resembling the work of the *vetusta ecclesia* at Glastonbury Abbey, more generally known as St. Joseph's Chapel, which was not dedicated until St. Barnabas' Day, 1186, by Bishop Reginald, the successor of Robert, being the first portion rebuilt of the Abbey Church after the great fire of 1184. In his chapter on Reginald, Canon Church conclusively proves from documentary evidence that building operations of importance were being carried out during his episcopate, grants appearing "ad constructionem novi operis," mention being made of repairs to the chapel of St. Mary, and a grant by Nicholas de Barrow "in consideration of the Conservation of the Canons of Wells, and the admirable structure of the rising church," and thus refutes the theory advanced by the Canon of Wells and Godwin, "that nothing was done between Robert's and Jocelin's time." Other reasons are given in support of this. Reginald was a "vigourous man, a Norman, and might be supposed to have had that love of building which distinguished the race." His travels, and his knowledge of other works, which were going on at the time, both at home—at the great Abbey of Glastonbury, across the moor six miles away—and abroad, "in his uncle's diocese of Coutances," would all be likely to stimulate his desire of continuing the work at his own fabric at Wells during his episcopate (1174-1191). The present church, too, shows good evidence of this period when the so-called "Early English" style had not completely thrown off the stiffer forms and ornament of the Norman period, but had begun to show signs of the fuller development which took place in the following century.

Savaric followed Reginald, and "his worldly and eccentric career is a strange interlude between the decorous and beneficent episcopate of his predecessor and that of Bishop Jocelin his successor." The Abbey of Glastonbury was by him annexed to the see of Bath "by a circuitous and bold intrigue," which "forms one of the ecclesiastical events which throw light on the relations of Church and State at the time just preceding the Great Charter." It will not be surprising to those who read this interesting chapter on Savaric that but little if anything was done to the building of the church by him, and we pass on to his successor Jocelin of Wells, 1206-1242, known as Jocelin Troteman, during whose time the ascendency of Wells was continued, and building operations, both at the Cathedral and its surrounding buildings—the Palace and the Canon's houses—were carried on.

"Between the years 1206-1242 Bishop Jocelin repaired, enlarged, completed, and consecrated the church anew," but he was an exile from 1208 to 1213, and the completion of work was necessarily delayed until after his return. With regard to the documentary evidence of Jocelin's work, Canon Church says, "We are disappointed at finding so little."

* "Chapters in the Early History of the Church of Wells." By Rev. C. M. Church, M.A., F.S.A. London: Elliot Stock, Taunton: Barnicott & Pearce.

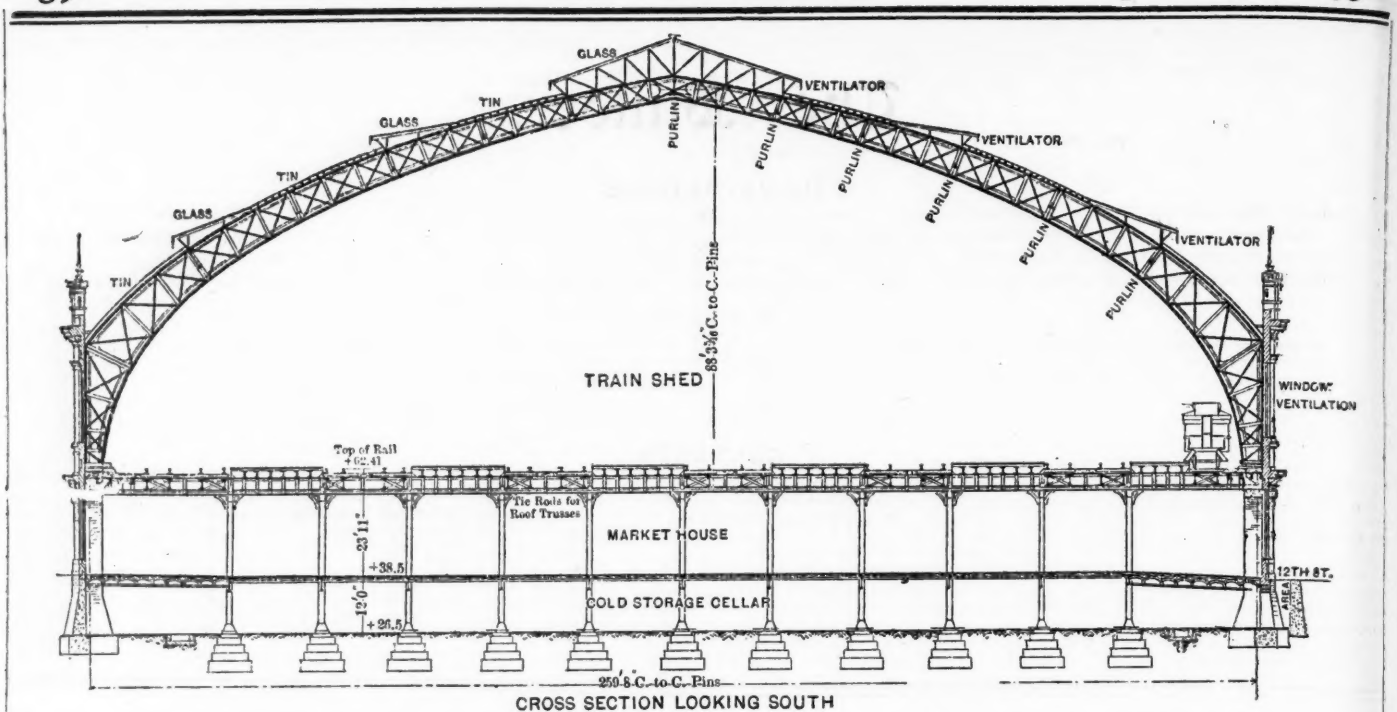

FIG 5

Section of Broad-street Station, Philadelphia and Reading Railway, U.S.A.

Jocelin died November 19, 1242, at which time the cathedral church was finished, and the burial-grounds at the west, south-west, and south-east, for the lay burials, Canons, and Vicars respectively, were arranged. To this period belongs the celebrated west front, with its fully-developed Early English features and its valuable statuary, and some pages are devoted in the book under notice to the architectural differences between this west front and the earlier detail of the nave and transepts.

The fifth chapter is devoted to Roger of Salisbury, 1244-47, whose episcopate is "short but memorable in the annals of the Church of Wells." It was in his time that the long controversy between Bath and Wells was brought to a close by mandate from Pope Innocent; and the Bishop took the style of "Bath and Wells," elected by the Monks of Bath and the Canons of Wells alternately, and so continued until the dissolution of the community at Bath left Wells, "the sole seat of the Bishop," although the double title is retained at the present day.

In a succeeding chapter Canon Church traces the growth of the Chapter at Wells from 1242-1333, and the building operations which, from the year 1286, "went on for at least fifty years," the result of the more secure condition of the finances of the community. To this period is assigned the building of the beautiful octagonal chapter-house, so notable a feature in eastern views of the church, a worthy record in itself of the rise of the Cathedral Chapter, standing on a basement of earlier date. The stairs and approach from the transept are suggested as the work of Bishop Burnell, 1275-1292 — the builder of the chapel at the Palace — and the completion of the Chapter-house itself as that of Wm. de la Marchia (whose beautiful tombs stand against the south wall of the transept, and whose canonisation was so urgently but unsuccessfully desired) and Dean Godley, 1305-1332, his successor, who finished it, and to whom we "owe the preservation of early Chapter documents, and the formation of the first of the Chapter Registers, the Liber Albus, in the Chapter archives." During this period also the central tower was raised and roofed, the Lady Chapel built, the extension of the choir was made and refitted, and the parapet round the whole of the earlier church was renewed. A concluding chapter deals with the interior arrangement of the church, and with reference to this and the state of the fabric at this time, a detailed ground-plan is given forming a frontispiece to the work. This shows clearly the state of the church in that intermediate period before the eastern half of the presbytery, as we see it now, was completed, and joined to the earlier presbytery on the west and the Lady Chapel of Dean Godley on the east. In the appendices that follow, a great deal of documentary evidence is given in full, and also an account of the discoveries recently made immediately east of the cloister and south of the transept. The foundations of an early and a late chapel were opened up—the former only of which comes within the scope of the present work—and a plan showing this early chapel is given. The work throughout is illustrated with photographs of seals, some drawings of tombs in the Cathedral, a representation of a pastoral staff discovered some years ago in the precincts, and an excellent photograph from the south-east of the Cathedral itself.

In a work of this kind it is difficult to be critical. Much that might, in less able hands, have been "dry" reading, has been used by Canon Church to give a vivid and highly-interesting account of the historical events, not only in Wells itself, but in Europe, as they affected Wells and other ecclesiastical centres, and his pages are full of evidence bearing on the fabric and its architectural history which will be valuable to all those who take an interest in our Cathedrals, and wish to arrive at a closer understanding of the various portions, the periods at which they were built, their uses, and the events, sometimes peaceful and prosperous, at others troublous and full of jealousies and intrigues, which were characteristic not only of the greater communities of the Middle Ages, but also of the smaller. The book will take a foremost place amongst the valuable records of our Cathedrals, written as it is by one who knows the subject better than any other living authority; and although it is perhaps documentary rather than architectural, enough will have been said in this notice to commend the work to those who wish to supplement the detail of the architectural portion of the fabric with the no less necessary knowledge of the doings of the times which caused the buildings themselves to be erected.

A LARGE AMERICAN RAILWAY STATION.

ALTHOUGH in America it is customary to apply the term "train shed" to the most important part of a large railway station, yet engineers in this country will consider that a building containing thirteen lines of way, and one capable of dealing with the arrival and departure of no less than 300 trains a day, is a structure of more importance than its American name suggests to English ears.

As a matter of fact the building which has recently been constructed by the Philadelphia and Reading Railway Company was, when first built, the largest single span station in the world, although now it is compelled to rank as second, owing to the construction of Broad-street Station of the Pennsylvania Railway in the same city. This latter station has a roof over the platforms, 300 ft. 8 in. span, 100 ft. in height at the centre, and 598 ft. in length: while the one about to be described has only a span of 259 ft. 8 in., is 88 ft. in height at the centre, and has a total length of 652 ft. 6 in., and is consequently a little larger than the St. Pancras Station of the Midland Railway Company, the roof of which has a span of 240 ft. and a lengthof 600 ft. Although these are the largest station roofs that have been constructed, they have been eclipsed in point of size in such buildings as the Machinery Hall at the last Paris Exhibition, which had a span of no less than 364 ft. 2 in., and by a somewhat similar building at the recent Chicago Exhibition, the roof of which was 368 ft. span.

A corner site was selected by the Philadelphia and Reading Railway Company for their new station, having a frontage of 267 ft. and a depth of 663 ft. A number of preliminary sketches and designs were then prepared by the engineers and architects, and after careful consideration it was decided to adopt the Italian Renaissance as the type of architecture for the station building. This building, the total height of which is 170 ft., consists of a cellar, basement, and practically eight stories, the second and third stories being merged into one high story in that portion of the second floor occupied by the waiting-rooms.

The level of the railway being about 25 ft. above the street required the principal floor of the station to be placed in the second story, the first or ground floor being available for the entrance, waiting-rooms, ticket-offices, luggage-rooms, &c. It having been decided to establish the general offices of the company at the station, certain portions of the first floor, not otherwise required, and all the floors above the second story, can be appropriated for this purpose.

The exterior faces of the building on the street fronts are constructed of pink Eastern granite for the height of the basement and first-story, and above that of pink brick and cream and white terra-cotta. For a portion

of the work Gustavino flooring is used, and above the second-floor a slow-burning construction has been adopted consisting of iron or steel columns and beams, with heavy planked floors; the columns, beams, and under side of the floors being protected with "mackite" plaster boards on which the finishing plaster is laid. The partitions are also constructed of solid mackite 6 in. in thickness, a material that, while very light in weight, is unexcelled in its fire-resisting properties. The roof is of the same general construction as the upper floors of the building, and is covered with tin.

As we have already said, the platforms are covered by a single span roof, 259 ft. 8 in. span centre to centre of bearings (see section). The trusses forming this roof are of wrought-iron, and are hinged at the crown and springing line, and vary in depth from 12 ft. 6 in. at the haunches to 6 ft. at the crown and 4 ft. at the springing. Pins 5 in. diameter are used at the summit of the roof, while those at the bearings of the trusses are 5½ in. in diameter. The form of the roof and its proportions have been designed with great care, so as to produce the best artistic and architectural effects, and at the same time conform to the requirements of economical construction.

To the architectural engineer a roof is always an interesting study, and when roofs of large spans have to be considered, the interest naturally increases. The problem is, of course, to cover a certain area with a substantial roof, but in addition to this the architectural question of an artistic design in harmony with the other parts of the building is of very great importance. The trusses in this case are placed 50 ft. apart, centre to centre, and the assumed loading for determining the stresses and necessary sections were taken as follows:—

	Lbs. per square foot.
Weight of trusses, purlins, rafters, &c.	25
,, covering	8
,, snow	12
	45

Wind pressure was assumed at 35 lbs. per square foot against a vertical surface, and consequently against the curved surface presented by the roofs it was taken as varying between 15 lbs. and 30 lbs. per square foot.

The floor carrying the platforms, &c., is constructed of buckled plates carried by plate girders. Concrete is first placed upon these plates and on this there is a layer of Neuchatel asphalte one inch in thickness. Under the platforms the space has been utilized by the construction of an important market, and below this cellars have been built for cold storage.

As a general rule it is rather a delicate matter with the engineer or architect to give the cost of the work under his charge, as it often involves questions in confidence between himself and his client. The subject, however, is one of special interest to the professional man, as it enables him to put a check on his own estimates for similar work. In the present case, the cost of the station building, exclusive of heating, electric lighting, elevators, and other appurtenances to these special items, was practically 9*l.* per square foot of superficial area, or 11½d. per cubic foot of content, computed between outside faces of exterior walls, and from floor of cellar to top surface of roof. The station proper, that is, the platforms, &c., which are covered by the large roof, the lobby, including foundations and the cold storage cellars and rooms, cost 1*l.* 15s. 6d. per square foot of surface covered. The structural ironwork of the large roof cost 4s. 9d. per square foot of surface covered.

A full description of the work in detail is given in Mr. J. W. Wilson's able paper published in the August number of the "Transactions of the American Society of Civil Engineers" of this year, which contains much interesting information which is likely to be serviceable to those connected with the design or construction of railway-stations.

NOTES.

THE New York correspondent of the *Times* gives the result of the Report of the Nicaragua Canal Commission, which seems to indicate that so far the promoters of the canal have been falling into the same fatal error as in the case of the Panama Canal; formulating a great engineering scheme on an insufficient survey. The Commission reports that it would be most inadvisable to attempt the construction of the canal on the data now available; that new surveys are needed; and that they estimate the cost provisionally as about 133⅓ million dollars, or nearly double the Canal Company's provisional estimate. We feel convinced that the Atlantic and Pacific will ultimately be connected by a canal through the isthmus between North and South America, but the world will not stand another Panama Canal business, and the Commission has done good service for the present in showing the necessity of caution, and of thorough surveys, before proceeding any further in the matter.

THE proposal to destroy the Trinity Hospital at Mile End, referred to in our last issue, has attracted a degree of public attention and opposition which leads one to hope that the London public are becoming a little more alive to the picturesque and historic value of their ancient buildings. A great many of the daily papers seem to have taken part against the scheme; the *Daily Chronicle* even collected and sent the amount said to be requisite for putting the buildings in a sanitary condition. Perhaps it is not very surprising that this was refused; it was a somewhat obtrusive interference, although one can entirely sympathise with the intention. The "Committee for the Survey and Registration of Old and Interesting Buildings of Greater London" have addressed petitions, in nearly the same terms, to the Charity Commission, the Trinity House, and the London County Council, pointing out that the Trinity Hospital, or College, owing to its intimate connexion with the naval and mercantile history of England, may be considered to rank as a national memorial, full of historic association; that the present group of buildings provides for London a fine open space in one of its greatest and most crowded thoroughfares; that any building over of the site, which would result from the sale of the property, would be greatly detrimental to the health and well-being of the neighbourhood; that the actual buildings have great æsthetic value, being unique of their kind; that they are in the nature of a local museum, being filled with many examples of statuary, inscriptions, memorial tablets, leadwork, and very valuable stained glass, removed by the Elder Brethren from their Hall at Deptford Strond in 1793; and that the plea of the unsanitary condition of the Hospital, which has been urged by the Corporation as an excuse for its destruction, is not true, or is at least much exaggerated (as is very probably the case). The petition is signed by Mr. C. R. Ashbee, Chairman of the Committee, and by Sir Walter Besant. The Committee on behalf of whom they act includes among its honorary members Sir F. Leighton (Honorary President), Mr. William Morris, Mr. Hamo Thornycroft, Mr. G. Frampton, Mr. J. T. Micklethwaite, Mr. J. J. Stevenson, Mr. E. W. Mountford (Hon. Vice-President) &c. &c. It is to be hoped that this petition, and what has been said in the papers, will have some effect, but it is extraordinary what persistence people generally show in destroying an interesting building when they have once got the notion into their heads.

THE Commissioners of Her Majesty's Works and Public Buildings have notified their intention to apply for an Act which shall authorise them to acquire, by compulsory purchase or otherwise, certain property for the purpose of erecting public offices on the Parliament-street (Westminster) site. The lands and buildings in question are situated within the area bounded on the north by Charles-street, on the east by Parliament-street, on the south by Great George-street, up to and including No. 23 in that street, and by Boar's Head-yard, and on the west by Delahay-street and the new buildings of the Institution of Civil Engineers.

THE recently-reported case of Lord Battersea *v.* the Commissioners of Sewers raised an ingenious point in regard to the law of light. The plaintiff had had an access of light for more than nineteen and less than twenty years: the full prescriptive period of twenty years had thus not run, but, on the other hand, as to defeat a right there must be an interruption of a year, it was argued on behalf of the plaintiff that he was entitled to an injunction because there never could be any such interruption as would defeat his right. The judge held, however, that he must act on the words of the statute, and that he could not grant an injunction till the full statutory period had elapsed. The decision was a sound one: the judge was really being asked to go beyond his jurisdiction. It was as nearly as certain as anything could be that the plaintiff was merely anticipating a right which would be in existence in two or three months. But it would have been dangerous to act on this rough and ready principle, and introduce a new and rather risky ground of judgment.

WHILE we recognise Dr. Longstaff's paper at the Architectural Association (reported in full on another page) as in the main a most able and fair summary of the subject of the Municipal Control of Buildings, we cannot by any means agree with him in thinking that the framers of the London Building Act did wisely in allowing any class of dwelling-house with walls only 9 in. thick. In this climate a single-brick wall is not thick enough for an outside wall, even if we could insure it being always well-built, which we cannot do. It is all very well to say it is a question of cost; that argument might be applied to a great many more requirements of the Building Act. It is always more costly to erect substantial and sanitary houses than unsubstantial and insanitary ones; that is exactly why a Building Act is required.

THE circular of the Board of Trade in regard to precautions against the bursting of domestic boilers during severe frost is well-timed. It is, we should suppose, primarily addressed to insurance companies, as we do not imagine it is to be delivered to every householder in the kingdom. It is, however, doubtful if any number of circulars will prevent these explosions, since those who now take insufficient precautions will, probably, not be more careful because the Board of Trade issues a circular on the subject. Self-interest is the only cause of care in such cases, and insurance companies are frequently the persons most interested.

THE electrical tramway which has just been completed at Coventry, however useful it may prove, can hardly be regarded as beautiful. It runs from the railway station to Bedworth, a distance of six miles, passing through the villages of Foleshill, Longford, and Exhall. The overhead work is a very good object-lesson to town counsellors and others, as almost every variety of method is employed. For the first part of the route the trolley wire is supported by span wires, stretched between plain tubular posts situated on each side of the street, a primitive method long since discarded by every self-respecting town in America. Next it passes Grey Friars Green, and along here the wire is suspended from single bracket standards which form

part of the railings, the effect being not unpleasing. However, span wires are soon resorted to again, the wires in many cases being fixed to rosettes bolted to houses on opposite sides of the street, special precautions being necessary to prevent the vibration of the trolly wire being communicated to the houses. There seems to have been very little attempt at either uniformity or elegance, the methods of suspending the wire proving the ingenuity of engineers to whom economy and efficiency were the only considerations. The rails used are the rails of the old steam tramway which came to an untimely end nearly two years ago. Consecutive rails are joined together by the now well-known "Chicago" bond, There are eight cars fitted with motors, and two without motors, which will be used as "trailers." The cars are well made, and each has ten 16 c.-p. lamps lighted direct from the trolley, a great improvement on the light one gets in a London omnibus. At Foleshill, about the middle of the track there is the power station, which is thoroughly equipped with the best modern engines and dynamos. The principal lesson to be learned from this tramway is that the "overhead work" is the most important from the citizen's point of view, and that this part of the work should be supervised by some one who has some respect for the most elementary principles of art.

THE Council of the Institution of Electrical Engineers have nominated Sir David Salomons as President, an action which is being strongly opposed by many members, and to a certain extent by the electrical press, on the ground that the post should only be held by one who has attained the highest eminence in electrical science or engineering. The burden of the objection no doubt lies in the fact that Sir David Salomons is an "amateur;" that is to say, he does not pursue electrical work with the object of making a living; but those who know what "M.I.E.E." really amounts to will probably think that, until the Institution is more strict in the election of its members, it is absurd to pretend that by electing an able and educated man like Sir David Salomons, whose book on "Secondary Batteries" was for a long time the standard work on the subject, the members are doing otherwise than honouring themselves.

MANY of our readers will hear with regret of the death of Mr. Philip H. Rathbone, of Liverpool, who was as well-known in artistic circles in London as in his native city. Mr. Rathbone was a member of a family who have for several generations held an important place among the great shipping houses of the port on the Mersey, and "Green Bank," the house which has been occupied by one head of the family after another, has been known to many distinguished visitors from all parts of the world. Mr. Philip Rathbone was, we believe, the first of his family who directed his attention specially to art; and he exercised a great deal of influence in creating a new interest in art in Liverpool. It is probably almost entirely due to his personal persistence and to his liberality that the sculptured panels at St. George's Hall, neglected for so many years, were ever commenced; or that, being commenced, they were ever continued, the first panel having aroused a violent opposition from people who had probably never given a thought to ideal and decorative sculpture in their lives, and who could not understand the sculptor's intention. Mr. Rathbone may not always have been quite judicious in his artistic polemics—he was not particularly careful to conceal his contempt for those who did not share his enthusiasm about art; but his enthusiasm was genuine and his judgment generally sound, as would probably be testified by many eminent artists who will miss in him an appreciative friend.

THE small paintings in Mexico, by Mr. Mortimer Menpes, now on view at Messrs. Dowdeswell's Gallery, appear to be a series of very clever theatrical tricks in colour effect, worked up for the purpose of an exhibition, rather than a genuine study or portrayal of the life and character of the country supposed to be represented. Mr. Menpes has no doubt remarkable powers as a colourist, and he has evolved a technique and texture of his own which assists in giving individuality of character to his works; but his art is insincere and pretentious, and (to judge from the list of prices appended) the public has been mystified into thinking these stagey effects of much more value than they really are. In the other room at Messrs. Dowdeswell's are a number of Mr. Wimperis's drawings, mostly the same which were lately exhibited at the Fine Art Society's Gallery, and it is rather melancholy to find some of the most beautiful small landscapes one could wish to see, offered at prices that are so ridiculously low in comparison with the sums asked for Mr. Menpes's small groups of badly-drawn figures in artificial light effects, remarkable in point of colour, no doubt, but in a certain sense representing neither nature nor art. Some of the slight sketches in light-coloured frames at one end of the room, and which seem to represent the unsophisticated studies on the spot, before the cooked-up effects were developed, are far better in an artistic sense than the finished works, "Mid-day, Jalapa" (37) especially, which is a charming and complete little sketch, and far more genuine work than its more luridly-coloured neighbours.

THE small exhibition of original lithographs at Messrs. Dunthorne's turned out to be very interesting. The works exhibited were mostly by artists of known powers, some of whom had not previously made use of this medium of work. Mr. W. L. Wyllie, in "Brighton Beach," succeeds in producing a remarkable light and airy effect by very slight means. Mr. Watts and Sir F. Leighton contributed studies of heads in red, and Mr. Legros a very powerful portrait of Cardinal Manning. Mr. Axel Haig sent two or three architectural subjects; we do not know that they indicated the effect of lithograph as equal to that of etching. The best powers of lithograph are shown in broad massing of light and shade, as in Mr. Overend's powerful study of the stern of an old line-of-battle ship, under the title "Cheering the Admiral," and in Mr. Goff's "The Deserted Quarry." Mr. Short, as in "Timber Ships, Yarmouth," treats lithograph almost exactly as he does etching—putting a few delicately-outlined subjects on one portion of the paper, and leaving a wide expanse of untouched surface between that and the slight indications of foreground. This is an admirable kind of scheme for bringing out the most characteristic qualities of etching, but as a treatment for lithograph it seems to be throwing away a good deal; and although the line-work in such a drawing is different from etched line-work, it could be done just as well with a pencil-point, and on ordinary paper, as with lithograph chalk on transfer paper, and on the whole would look better. Mr. Herbert Dicksee's drawing of a tiger, walking with long strides, is an admirable animal study; the creature seems really to move.

THE Art for Schools Association is now holding its annual exhibition at 29, Queen-square. It will be open till December 9. The pictures are principally well-known ancient and modern works reproduced by various processes, and all of them at most moderate prices. The Association is certainly doing a good work in bringing beautiful pictures within the reach of everyone, more especially of school-children, though we must confess that neither Rossetti's "Veronica Veronese," nor "Death as a Murderer," by Alfred Rethel, seems at all suitable for school-room decoration. There is a fine heliogravure of Constable's "Salisbury Cathedral," a very beautiful photograph of Turner's "Téméraire," and a photograph, in two sizes, of Hobbema's well-known "Avenue." There are some very good photographs of wild animals evidently taken in the Gardens, which we do not remember to have seen in previous exhibitions. There is a good set of decorative friezes by M. Paul-Albert Baudouin; the high glaze on these, however, though it may be desirable from a sanitary point of view, rather spoils the artistic effect. We noticed also a chromolithograph of Magdalen College, which was so successful in the blending of colour that it might almost have been taken for a water-colour drawing. The Association deserves the sympathy and support of those who desire that children in our schools should be familiarised with good designs and representations of nature in a cheap form.

A "FINE-ART COMPETITION" is announced to be held early next year at the galleries of the Royal Institute of Painters in Water-colours, instituted apparently by Messrs. C. W. Faulkener & Co., who intend to give prizes to a large amount, and hold out hopes of their purchasing also a good many of the works to which prizes are not awarded. The works are to be classed under three heads: Pictures suitable for reproduction as presentation plates, frontispieces, or as studies for painting; designs for show-cards, calendars, almanacks, &c.; and designs for Christmas cards and other cards of similar type. These two latter classes may perhaps show something that is interesting and new in this class of design. The judges are three Royal Academicians, Messrs. Calderon, Luke Fildes, and A. C. Gow. There is also to be a fourth section devoted to photography. In connexion with the same subject we may also note that Messrs. Carl Hentschel & Co. are offering three prizes for the best drawing to be used as an advertisement, the judges being Mr. Lewis F. Day, Mr. Jacobi, and Mr. Joseph Pennell.

A NEWCASTLE paper, the *Daily Leader*, has been entering on the field of architectural criticism in regard to the new buildings in that city; or perhaps we should not say criticism so much as congratulation. Everything seems to be for the best in the modern architectural improvements of Newcastle, more especially in the case of the new Freemasons' Hall, "which is built in the Ionic and Doric styles, which conjointly produce a good effect, with the lighter style of the latter supported by the more substantial Ionic." (!) It is a pity that daily papers, when they attempt architectural criticism, do not put the matter into the hands of a person with at least sufficient knowledge of architecture to avoid such nonsense as this.

THE recurrence of lectures on the architecture of Robert Adam, in the lecture-lists of provincial architectural societies, would seem to indicate a curious tendency to revive the old Adam, were it not for the fact that the papers are all by the same author, who gave a lecture on Robert Adam some little time ago at the Society of Arts (in which his architectural merits were rather exaggerated), and who seems now to be reading the same paper to various provincial architectural societies. This is a new departure in the system of paper-reading, and not, we think, a commendable one. A society which invites any one to read a paper expects generally a paper written for its Proceedings, and cannot feel very much complimented at being given a stock paper which has been previously read on several other occasions. At all events, we must give notice to the hon. secretaries of provincial societies that we can give no further reports of this peripatetic paper on Adam.

THE PROPOSED HONORARY CORRESPONDING MEMBERS OF THE INSTITUTE.

It is important not only that the roll of Honorary Corresponding Members of the Institute in foreign countries should be kept filled, but that it should be well filled, and further with names of men who hold a high position in their own respective countries, otherwise the distinction will lose some of its value. Lately this seems to have been more fully recognised than perhaps it was at one time, and the selection has been made after fuller enquiry.

Three names proposed will be put up for the ratification of the general meeting on Monday next, and it may therefore be of interest to give some little account of the foreign architects whom it is proposed to adopt as Honorary Corresponding Members.

The absence of any name of a Russian architect on the list, which was referred to by Mr. Penrose in his address last session, is now to be amended, and though the field is a wide one to choose from, the Council have done well in selecting Professor Victor Schroeter, who not only holds a leading position among his professional brethren in Russia, but is also a prominent official, and an architect widely known beyond the limits of his own country. Professor Schroeter, who is now a Privy Councillor, holds the position of architect to the Czar's Theatre Administration at St. Petersburg, and is the "Architecte-en-Chef de l'Administration Générale des Appanages." He is principally known in connexion with his position on the Imperial Theatre Administration, and as the architect of numerous theatres and opera-houses in Russian provincial towns. His practice extends to Siberia, where he has erected a theatre at Itkurst. Rybinsk, Nijni-Novgorod, and Tiflis, among other cities, have theatres from his designs. Of these the building at Tiflis is certainly the most remarkable for its excellent and at the same time novel plan and its successful architectural treatment. Professor Schroeter's design for the Grand Opera House at St. Petersburg, the plans of which had been passed by Alexander III., just before he died, perhaps best shows the proposed new Corresponding Member's ability. We were able to reproduce some of the drawings in December, 1894; and from these it will be seen how successfully, and with what originality, this scheme was worked out.

Among the essentially utilitarian works which the Professor has had charge of in connexion with his position in the Czar's Administration we may, in the first place, note the alteration and extension of the Mary Theatre at St. Petersburg in 1885. This building has seating accommodation for 1,700, and covers a very large area. The Alexander Theatre, of the same administration, was altered in 1890, and the central administrative block extended in the same year. Professor Schroeter also superintended the erection of some large scenery stores for 135,000 costumes, 20,000 pieces of armour, and innumerable sets of scenery, which are used by the six theatres of the administration. All these works are unusually successful on account of their excellent planning. Professor Schroeter, as his name implies, is of German family originally.

It is curious to observe how often it just falls to the lot of men who have made a name as theatre builders to be Honorary Correspondents of the Institute. Last session Herr Fellner, of Messrs. Fellner & Helmer, was elected. The firm has erected some forty of the finest theatres on the Continent. M. Garnier (Paris Opera-house) is on the roll; the late Baron Hasenauer (Vienna Court Theatre); Von Ybl (Buda Pesth Opera-house); Signor Basile (Palermo Theatre), have all held this distinction. The study of their successive designs is highly interesting.

Herr Stuebben, the second of the three new members proposed, is practically the leading city surveyor of Germany, and is recognised as the most prominent official architect in the country. That his office should be in Cologne instead of Berlin is somewhat an anomaly, but his professional work, as in the case of other prominent city surveyors in Germany, such as Mr. Lindley (Frankfort), and Herr Meier (Hamburg), practically extends over the German-speaking countries of the Continent, if not further. City Councils abroad do not adopt the same shortsighted policy as some of our English municipalities, in restricting the private practice of their leading officials. They consider it beneficial for their officers to come in contact with other matters than those of their own limited city sphere. and the authorities congratulate themselves if their officers are prominent men, whose advice is sought by outsiders.

Herr Stuebben's name has been principally associated with the laying out and "improvements" of the larger German towns, and his excellent work at Cologne has done much to increase the prosperity of this city and improve its bill of health. He has also been associated with the Cologne Cathedral improvements, which included the rearrangement of an extensive area, and he has taken a very prominent part in the German movement for better housing of the working classes. Herr Stuebben frequently contributes to the journals of his country, and has lately published a book on the laying out of cities. It would take too much space to mention even the more important instances in which he has acted as expert or arbitrator, and among the distinctions which have been conferred on him we would note an *ex-officio* seat in the Cologne Common Council, a distinction which can only be conferred with the sanction of the Prussian Government, and is rarely accorded.

Herr Carl Heimann, who recently visited London, has probably been proposed on personal grounds. He is Deputy City Architect of Cologne, and is on the retired list of "Crown Inspectors." The restoration of the Gürzenich Hall was his best work. We have nothing to say against his election, but we think it rather strange that he should take precedence in this respect of Herr Wallot, the architect of the Berlin Parliament Houses, and some other German names might be mentioned which have prior claims to the compliment.

Looking through the lists of foreign architects and surveyors who have attained prominent positions, we still find a considerable number of distinguished names which should figure on the Institute roll. The activity in building matters on the Continent, and especially in the public works of the German-speaking countries, has been unusual of late years, and has brought new names before us which should not be overlooked by the Council if they wish to keep in touch with the times. Many of the best examples of modern work abroad are illustrated in this journal, so that opportunities are afforded to our readers to study the progress made in different countries. We trust that they will also be an assistance in the selection of future Honorary Correspondents to the Institute.

THE ARCHITECTURAL ASSOCIATION:

THE MUNICIPAL CONTROL OF BUILDINGS.

The third ordinary meeting of the session of this Association was held on the 22nd inst., in the meeting-room of the Royal Institute of British Architects, Mr. W. D. Caroë, M.A., F.S.A., President, in the chair.

New Members of the Association.

The President submitted the names of the following gentlemen for election as members:—Messrs. P. G. Silley, A. E. Willey, F. J. Lloyd, E. H. Morphew, W. W. Biss, F. C. Evans, H. R. Groves, V. T. Hodgson, G. H. Jenkins, A. E. Nicks, G. S. Powell, J. H. Berner, K. Biong, F. Bond (described as "interested in architecture," and proposed by Mr. F. G. F. Hooper and seconded by Mr. E. R. Barrow), and Mr. J. Gamble (described as a "teacher of architectural drawing," and proposed by Mr. Alfred Waterhouse, R.A., and seconded by Mr. R. Phené Spiers).

Mr. H. Lovegrove asked whether gentlemen who were simply interested in architecture were now going to be admitted as members of the Association.

Mr. C. H. Brodie remarked that he also thought of raising the same question.

The President said the by-laws provided for the election of gentlemen who were interested in branches of the arts connected with architecture.

Mr. Brodie said he did not think a teacher of architectural drawing quite came under the description given in the by-laws. He presumed, however, that all the names had been passed by the Committee.

The President said it was quite within the province of the meeting to object to any single name. They were not bound by what the Committee had done in the matter—in fact the Committee would naturally wish to be guided in matters of this kind by the general meeting.

Mr. Brodie then proposed that the names of the two gentlemen who were not distinctly described as being architects be referred back to the Committee.

Mr. Lovegrove seconded the motion, and remarked that for many years they used to quibble about whether a man was articled or not, and now they seemed to let anyone into the Association.

Mr. E. W. Mountford said it was no good referring the names back to the Committee. Everyth ng had been done in strict accordance with the by- aws, and the names of the proposers or seconde s ought to be a sufficient guarantee.

The President said the names had been fully discussed by the Committee, and he would be very sorry if the members thought that they were prepared to admit "anyone" to the Association. Mr. Bond was proposed by one of the members of the Committee, and Mr. Gamble was proposed by Mr. Alfred Waterhouse and seconded by Mr. Phené Spiers.

Mr. Lovegrove remarked that the Association would have to add to its title if it also became an association of teachers.

The President then put the names to the meeting *en bloc*, and they were declared duly elected.

Mr. B. F. Fletcher (Hon. Secretary) announced that the executors of the late Mr. Ewan Christian had presented some valuable books to the Association. He proposed a hearty vote of thanks to the executors for their kind gift.

The President stated that Mr. Christian provided in his will that certain books should be presented to the Association, so that really they were indebted to him and not to the executors for the books.

The vote of thanks was passed with acclamation.

The President announced that the first lecture on "Special History," by Mr. F. R. Farrow, would take place on December 16, at 6.30 p.m., and the first lecture on "Practical Design," by Mr. Beresford Pite, on January 6 next, at 7 p.m.

Dr. G. B. Longstaff, L.C.C., then read the following paper on "The Municipal Control of Buildings":—

The question naturally arises, Why should buildings be controlled by the Municipality? Do not those who build know their own business? Has not every man a right to do what he likes with his own? Is not the meddlesome interference of officialdom un-English, unpopular, and, in fact, an unmixed evil?

There is, of course, much truth in these suggestions. Speaking for myself, I am inclined to *laissez-faire* as a sound general principle, but, as is often the case when a conclusion does not seem to flow from admitted premisses, there is a conflicting principle to be taken into consideration which may be shortly expressed in the words, "circumstances alter cases."

The experience of communities in which competition and individual caprice have been given free play shows that, where buildings are crowded together, evils are but too apt to arise and to assume such proportions as to become sooner or later unbearable, so that ultimately the Local Government has to step in and apply a remedy which under the circumstances may be difficult of application, unjust in its bearing upon individuals, and in any case is pretty sure to be costly.

To quote a few instances, and to begin with the most obvious. Cities and large towns must have some means of disposing of the excreta of their inhabitants, and of the large quantities of water fouled by the washing of their persons, clothes, and culinary utensils. This can be applied comparatively easily if the common works be carried out beforehand by or under the supervision of the Local Authority, and if the various buildings be erected so as to comply with certain general principles of construction and arrangement. On the other hand, to apply a drainage system after the town is built will be more difficult, more costly, and probably not so effective.

Yet even in such an obvious case as this the municipal control should be carefully regulated; it should be limited to general principles, and not enter into petty details of construction. The by-laws made by the London County Council under Section 39 of the Public Health (London) Act, 1891, scarcely appear to my mind to fulfil this condition, and I should not be surprised to find that many here concur. But if those gentlemen had seen the first or even the second draft of those by-laws they would be filled with gratitude towards those who criticised them, and in place of feeling aggrieved would rejoice at the comparative freedom they are allowed.

One reason amongst others which makes minute interference and precise regulations in such matters most undesirable is that it stops the way of experiment and so prevents possible improvements. The end to be aimed at may be definitely laid down, but not the means of obtaining it; on the contrary, the greatest possible latitude should be given to inventive energy. London legislation, wisely or unwisely, deals with drainage apart from other points of building construction, and I shall not allude to this part of the subject any further.

Assuming, then, that municipal control is desirable or necessary, and assuming also that such control should be limited in its scope, the first point to consider is in what respects it should be exercised.

Now buildings may be considered from the point of view of :—

(1) *Stability*; (2) *Fire*: (3) *Health*; (4) *Position and mutual relations*; (5) *Convenience*; (6) *Beauty*.

As regards *Stability*, I presume that no one will object to the laying down of minimum thicknesses for walls, and of minimum scantlings of timbers, though it may be difficult to draw up a workable schedule for the latter. Also it will be agreed that sound principles of construction should be insisted on. Whether the provisions of the London Building Act err by excess or defect is for you to say rather than for me. It may be that some of its provisions dealing with construction, though they may not oppress builders, may serve no useful purpose, if so they are excrescences, and should be removed when opportunity offers. A good deal in this direction was done at an early stage of the Bill, but personally I regret that time did not allow of a more careful consideration of Part VI. before the Parliamentary Committees. However, architects well versed in the old law and the new will recognise that—outside Part V.—the new Act allows much more latitude. As instances in which this is the case I would quote Section 73, which permits, subject to certain limitations, the erection of bay-windows and projecting oriels and turrets without the formalities and delay attending a special application to the Council. Also the second paragraph preliminary to the First Schedule, which allows walls to overhang to the extent of six inches. Again, detached greenhouses, sheds below a certain size, and small cycle-houses can now be erected without special leave, or subject to less tiresome restrictions than before. Also Section 54 deals with openings and recesses in a much more liberal way than the old Act, a point that will be especially appreciated by City architects. Lastly, the words added to sub-Sections (11) and (12) of Section 201, in effect greatly extend the number of detached suburban houses which will be wholly exempted from the Act.

Fire affects buildings as regards their liability to burn when once set alight, the spread of fire from one building to another, and the escape from fire of their inmates. This part of the subject is one to which municipal authorities, as being also the fire-extinguishing authorities, naturally attach much importance. For this very reason it is a part of the subject which requires to be closely watched as being specially liable to a pedantic and officious treatment.

It is well known that the regulations of the London County Council as to the structure of theatres are so onerous that it is now a matter of great difficulty to erect a theatre in London, and there is a tendency to apply these regulations to small buildings of a comparatively unimportant character, which it is difficult to suppose that the Legislature intended to be so controlled. The 74th Section of the London Building Act (1894) deals with the protection of life from fire, but I fear that it will be found in many cases unduly onerous. It is at least open to question whether buildings only ten squares in area should be in all cases so constructed that the part used for trade should be separated from the part used as a dwelling-house by fire-resisting structures, but I believe that as a matter of fact this point was overlooked by the numerous opponents of the Bill. It is a matter of much regret to me personally that the projection of party-walls above the slates is still insisted upon, even in the smallest dwelling-houses, as not only am I fully aware that the rule is strongly objected to by many architects on both structural and æsthetic grounds, but because the evidence tendered to the House of Commons Committee was in my opinion conclusive that this precaution is not required in the case of buildings used exclusively as dwelling-houses. On the other hand, that the new schedule of fire-resisting materials allows much greater elasticity than the old will I think be appreciated by those who have to work under it.

As regards *Health*—apart from all questions of drainage and water-supply—the points that arise are the thickness of walls, damp-courses and ventilation. The thickness of walls is mainly governed by questions of stability, but in the discussions that preceded the first drafting of the London Streets and Buildings Bill it was suggested that 9-in. walls should not be allowed in any case for dwelling-houses. There is no doubt that such walls are objectionable; unless the best materials are used they cannot be trusted to keep out the rain, and they are cold. As a fundamental principle underlying all building legislation it should ever be borne in mind that while it is comparatively easy to enforce a standard of excellence which admits of measurement by the 2-ft. rule, it is practically impossible to prevent the use of inferior materials. Nevertheless it will probably be admitted that, taking into consideration the great importance of cost, the Council was wise not to advocate the extreme measure of abolishing the one-brick wall. Whether indeed it was wise in stiffening the schedule of thicknesses is, I know, disputed, and I was surprised that the first schedule was not gone into in Committee. The schedule as it stands was the work of practical members of the Building Act Committee, and it was left for practical men to criticise it. I believe the only suggestions in opposition came from one or two district surveyors who deemed the old rules sufficient.

The question of damp-courses is not an easy one. Foundations and damp-courses in London are at present regulated by the old By-law under Section 16 of the Metropolitan Management and Building Act, Amendment Act, 1878. A great part of this Act, including Section 16, has been repealed, but the By-laws continue in force under Section 216 of the Act of 1894. This By-law, although it admits of amendment, allows considerable latitude of practice. The main reason for its existence is, that while speculative builders do not, as a rule, see the necessity for damp-courses, layers of concrete and the like, after a wall has once been erected, a damp-course can only be inserted at the expense of much labour. Damp walls are no doubt unhealthy, without question they cause much trouble and annoyance to those who dwell within them. Mr. Stenning has pointed out that in so far as a layer of concrete beneath a building is designed to exclude emanations from the earth, it is more necessary in the case of a gravelly soil than in any other, yet the London By-law exempts gravelly sites! That this danger is a real one has been proved on more than one occasion by explosions of coal-gas in houses which have been traced to leaks in the mains under the impervious street pavements outside the houses.*

As regards ventilation, a sanitary requirement which in my opinion comes even before drainage in importance, it is obvious that we can do no more than provide the means for it, and these should be the simplest. It is both wise and reasonable to insist that every habitable room shall have a window or windows bearing at least a certain proportion to the size of the room, and that at least half of the area of such windows shall be made to open. Certain attempts in some provincial towns to prescribe the height of the top of the window above the floor have not only proved destructive of all architectural proportion, but have produced ridiculous results. Indeed, I have long been of opinion that, next to the general use of Welsh slates, few causes have in this country contributed so much to the deterioration of the architectural effect of ordinary commonplace domestic buildings as the almost universal desire for lofty rooms and large windows, more especially in the upper stories. The picturesque windows of the fifteenth and sixteenth centuries, nestling close under the broad eaves, and often placed nearer to the floor than to the ceiling, are a thing of the past. But even as compared with the last century, the ordinary street house of to-day looks top-heavy by reason of the size of the windows of the upper stories. All must admit that the modern bedroom is better lighted and ventilated, and more habitable generally, than those of the old half-timbered houses of Kent and Sussex; nevertheless, while admitting this, it is open to doubt whether Sir Christopher Wren and his contemporaries did not go far enough in this direction.

The question of the ventilation of buildings admits of an entirely different system of treatment. If any extreme advocate of economy still defend the system of "back-to-back" construction of houses I would recommend him to make an architectural tour of the Scotland ward of Liverpool—so-called I presume from the fact of its inhabitants being almost exclusively Irish. Our countrymen may as a rule be most unwilling to ventilate their homes, and may even revel in stuffiness, but the very poorest should have the means to hand for getting a current of air through their rooms on a hot summer's night, and the sun's rays, which none of us get too much of, should have some facilities of aecess. Under the back-to-back system these primary requisites are lacking. This system reached perfection in Liverpool about half-a-century ago. An ideal plan having been invented, it was repeated wholesale, as if by cunningly-devised machinery; the resulting evils proved ultimately intolerable, and enormous cost was imposed upon the Town Council in its efforts to remove them. It is not surprising that Liverpool has led the way in preventive legislation.

The prevention of the erection of back-to-back dwellings is but one case of the general question of the *position* and *mutual arrangement* of buildings. Legislation in this matter is in my humble opinion of quite first-rate importance in its bearing on the public health; it is also beset with the greatest difficulties on account of its interference with the rights of property. There is also a peculiar difficulty which needs to be emphasised, it is this: A lofty building does not interfere much, or perhaps at all, with its own light and air, but it may interfere with the light and air of its neighbours to almost any extent. No law yet enacted and no by-law yet in force has boldly faced this difficulty. A building proposed to be erected, whether it be itself dwelling-house or counting-house, stable or factory, may equally smother a cottage now existing on the adjoining plot, or to be erected thereon in the future. From this elementary fact it follows logically, that any regulations which it may be deemed expedient to enact prescribing the height of buildings and the open space about them, should be applicable to *all* buildings, regardless of the uses to which they may be put. It is, however, doubtful whether Parliament would sanction such legislation. Hence we are driven to such compromises as legislation dealing with dwelling-houses only, or "domestic buildings." At first sight such a compromise may seem to be a satisfactory conclusion, but to the inhabitants of a long row of cottages, with very limited back-yards, it will appear less so. Picture to yourselves a row of six cottages having behind them small back-yards, which, in their turn, are separated by a wall from a strip of vacant land 40 ft. or so in depth, and abutting upon a street parallel to, and at the rear of, the six cottages. Two building-owners purchase this vacant land—A, who has purchased one-third of the frontage, erects thereon two cottages, and the law compels him to leave a certain space at rear of them and consequently adjoining the back-yards of two of the old cottages. The provision of this open space may be a very serious matter to A, and may greatly detract from the value of the site he has purchased, but it has the wholesome effect of preventing any very material interference with the light and air of the old cottages, although the erection of the new buildings (or for the matter of that of *any* buildings) may spoil the view from their back windows. B, warned by the experience of A, or having other views as to the investment of his capital, erects on his plot—the remaining two-thirds of the frontage—a warehouse or factory, and so doing is not compelled to leave any of his land vacant; on the contrary, he covers the whole of it with a building sixty feet in height, which may no doubt bring him in a considerable rent, yet by his act he will have made the back rooms of four of the old cottages unfit for human habitation! Some will no doubt say "how about ancient lights?" My reply is that the building-owner B may be compelled to pay a sum of money, possibly a considerable sum, to the owner of the old cottages, but there is no law to compel the giving of any portion thereof to the tenants of the same, nor is there the smallest reason to believe that they will get any benefit out of the transaction, certainly they will get no compensatory light and air. There is however another course open to B, he may buy the old cottages and continue to let them as before, while the demand for houses will probably prevent any material fall in the rents. From this instance it is plain that the compromise of the present law fails alike to secure justice as between individuals and the end primarily aimed at.

I am still of opinion that the angle of 45° as enforced in Liverpool in the case of buildings on new sites is not an unreasonable one, and I would urge on those who deem it excessive to take the first opportunity of inspecting some of the many houses erected in conformity with that angle in the newer parts of Liverpool.

To no one do the winding alleys of our cathedral towns or the picturesque irregularities of continental fortified cities afford more delight than to me, but there is a proportion in things,

* Since this paper was written a notable instance, attended with loss of life, has occurred in the Strand.

even though we are too apt to forget it. We must, albeit sadly, resign ourselves to the hard fact that these things belong to an age that is past for ever. Would that it were otherwise! We know, however, that these old towns, so charming to our eye, were, to use a somewhat canting phrase, "hot-beds of disease." It is pretty surely ascertained that in the seventeenth century the death-rate of London exceeded the birth-rate, and that the population was only kept up by the constant stream of fresh arrivals from the country. If this were so when towns were of moderate size, and when only a minority of our people were dwellers in cities, how much more serious would the results of picturesque overcrowding (that of Liverpool is not picturesque) be nowadays, when towns have attained such vast dimensions and yet continue to grow apace, so that an ever-increasing majority of the English people are doomed to spend their lives in the bustle and turmoil, the smoke and the smells, of the city of to-day.

Apart altogether from the sanitary aspect of the case, the greatly-increased traffic of the modern town demands far wider streets than formerly sufficed. Sir Thomas More doubtless thought he was acting very liberally when he laid out the towns of Utopia with streets twenty feet wide, but he went somewhat beyond the London Building Act in that he provided all the town-houses with gardens at the back in which were grown vines, fruits, herbs, and flowers. The houses were three "storeys"* in height; the materials were such as to resist the action of fire, and the line of frontage seems to have been very strictly observed, so that, as he tells us, "The buildings . . . are so uniform that a whole side of a street looks like one house." Three centuries and a-half have achieved streets double the width thought ideal by More, but three centuries and a-half have played sad havoc with his back-gardens! Part V. of the London Building Act, though deemed by many, I fear, to be over-stringent and exacting, scarcely allows of open space at rear sufficient to admit of the successful cultivation of vines, fruits, herbs, and flowers, at any rate, not in such profusion as to suggest More's words: "All is so well ordered, and so finely kept, that I never saw gardens anywhere that were both so fruitful and so beautiful as theirs. This humour of ordering their gardens so well, is not only kept up by the pleasure they find in it, but also by an emulation between the inhabitants of the several streets, who vie with each other; and there is indeed nothing belonging to the whole town, that is both more useful and more pleasant: so that he who founded the town, seems to have taken care of nothing more than of their gardens."† It has often been remarked that whereas in the present day house-builders seek out exposed and breezy sites, the men of old time preferred sheltered valleys; it is all of a piece with this practice that we find the streets of Utopia described "as very convenient for all carriage, and well sheltered from the winds." If the gospel of fresh air and the gospel of expediency have done much to exclude the picturesque from modern towns, is this not an additional reason for exerting ourselves to the utmost to preserve what is left to us of the works of our forefathers?

As regards the *internal convenience* of buildings, all will be agreed that any control would be quite out of place.

The quality of *beauty* is, of all others, perhaps that which modern buildings least often possess. Whatever may be the position of British architecture at the present day—and I am disposed to think that it compares very favourably with the contemporary architecture of other countries—the vastly greater portion of the buildings put up are built by men who, whether they call themselves builders, surveyors, or architects, deem architecture an expensive luxury, well enough, perhaps, for churches and town-halls, but a thing wholly divorced from the more numerous buildings in which folk have to live or to earn their living. The general neglect of architecture—meaning, thereby, the fine art—not merely by the builders but by the general public is a great misfortune to the country, and one not easily accounted for. It is a significant circumstance that the illustrated newspapers when noting the opening of a new public building as often as not omit to mention the name of the man who designed it, though the Worshipful the Mayor, who declared it open, is honoured with a portrait. Probably few laymen follow the example of the reader of this paper in annually examining the architectural drawings at the Royal Academy; he has, in the room set apart for their exhibition, over and over again been amused at the astonished indignation with which visitors, perchance entering the doorway, have started back on catching sight of the drawings on the walls; he has even been unfortunate enough to disturb a loving couple seeking congenial retirement in its solitude. And yet the crowds that pay their shillings at the barriers would fain be called æsthetic, or at any rate persons of taste. Now, which is the more important work of art, a picture — grand, perhaps, in conception, and glowing in colour, yet doomed in the nature of things to spend the greater part of its lifetime upon the indifferently-lighted walls of a private dining-room, to be seen only by its owner or his comparatively limited circle of acquaintance, or a dignified building set in an important thoroughfare to stand there for centuries, a constant delight to the many thousands who will daily pass under its shadow? Or, looked at from the point of view of the amateur collector, which is the wiser course, to spend large sums upon pictures and statues, and to store them in ill-designed rooms which no ornaments can make lovely, or to devote a like amount of money to the building of a house so designed that every corner of it forms a picture ever changing in its charms with sun and shade? Nay, further, surely good pictures lose nothing by being hung in a beautiful house, where, indeed, they have a chance of forming a consistent part of the whole. Yet, again, architecture, above all arts, binds us to the past so that even a superficial knowledge of it, provided that it be accurate, not only adds vastly to the interest of history, but materially facilitates its study. On these several grounds it appears to me that the importance of architecture cannot be overestimated, and the argument is strengthened if it be kept in mind that we are from day to day becoming more and more a nation of dwellers in cities. In proportion as we are divorced from all contact with Nature, in proportion, alas! as modern "Progress" too rapidly destroys so much of natural beauty, so are we made more and more dependent upon such beauty as Art can give us in substitution for that which is lost.

Admitting, then, that beauty is a quality in buildings which is of supreme importance, and that outside comeliness pre-eminently concerns those who do not dwell within, is it a matter for municipal control? For my part, I think it is not. To begin with, the greatest latitude should be left to architects as regards design, whereas any system of municipal control would be apt to hamper the noblest efforts of genius, and at the best would tend to strengthen the tyranny of the prevailing fashion of the day. *Quis custodiet ipsos custodes?* What one man deems beautiful another calls hideous, and I am by no means sure that this is less true of architects themselves than of vestrymen or county councillors. The Hanging Committee of the Royal Academy does not give complete satisfaction; could better results be expected from a Committee of Design?

Nevertheless, I have been an active advocate of a certain amount of control of an æsthetic character. I do not allude to the case of the County Council as a landowner approving the designs of buildings erected on its property by leaseholders, although in one such case I was partly instrumental in preventing the erection on a prominent site on the Thames Embankment of a building which would have marred irretrievably one of the finest prospects in London. That was a special case in which the Council acted as landlord rather than in its municipal capacity. But modern civilisation with perverse ingenuity has devised certain excrescences upon buildings which serve no useful purpose that I ever heard of, and which no Goth or Philistine will be hardy enough to claim as ornamental—to wit, sky-signs. This Association, at any rate, will not object to a municipal control tending to their ultimate extinction. A single advertising board judiciously placed upon the top of a building may vulgarise a whole street. To the end that one man may increase his income in a not very honourable way the purpose of vast outlay in public buildings may be thrown away. You will, I am confident, approve of the action of the Council in treating the huge advertising board on the top of a building and the sky-sign proper, as *ejusdem generis*—and this is now the law. Another enormity was first proposed for the offices of *Punch*, possibly as a far-fetched joke; the suggestion was to erect a cistern for a "sprinkler" upon lofty steel legs on the top of the building, for all the world like a colossal spider. But the Council crushed this new form of vermin ere it had emerged from the egg. Whatever enterprising tradesmen may say to such municipal action, you, gentlemen, have no cause to complain.

From this you will gather that as regards design my view is that the Municipality should on the one hand take care that its regulations interfere as little as possible with the efforts of the artist, but that it should do its best to protect him from extraneous foes.

I have endeavoured very imperfectly to indicate the principles which should underlie the municipal control of buildings. It is perhaps rather in the application of those principles than in the principles themselves that differences of opinion arise. Meanwhile I may state in conclusion that before long it will probably be necessary to go to Parliament once more, not so much to strengthen the hands of the Council as to remove ambiguities or inconsistencies in the law which practice has brought to light. In some cases amendments introduced in committee by irresponsible opponents (and not always expressed in the clearest possible manner) lead to inconsistent or even absurd results, for it is an admitted defect of our legislative machinery that there is no means of redrafting a Bill after its emergence from committee so as to ensure harmony in its several parts. In some cases provisions which have proved to be more far-reaching than was intended may need modification. But be this as it may I feel sure that any representations made by this Association to the Council would receive the most careful consideration and prove of great assistance in the drafting of any amending Bill.

Professor Kerr, in proposing a vote of thanks to Dr. Longstaff, said there was a feeling in the minds of many builders and owners to the effect that it was a great hardship to have to go to the County Council for any consent of a statutory kind, or, in point of fact, to have any dealings with Spring-gardens at all. He had always one answer for that suggestion, and that was this—that there was not, and could not be, on the part of the County Council and its officers any desire to oppress or harass the public. Dr. Longstaff admitted that the provisions of the Act were found to be in many cases very vague, but the intention to his mind was always clear. As a public officer acting under the control of the County Council, when any dispute arose he always took upon himself to say "Let us understand what is the intention of the promoters of the Bill, and of the authorities who have sanctioned the Bill, in the clause which is in dispute." If they could find out what the intention of the law was, they invariably saw that it was a beneficent intention, and why should it not be fairly and cheerfully met? Speaking generally he thought Dr. Longstaff had given them a very clear idea of what he might call the tendency of public opinion upon the question of municipal control. In England people had a great objection to be dragooned, and in respect of the Building Act it was just as well to acknowledge that, and to take pains to avoid in a proper way any operation of the Act which might be distinctly prejudicial to private interests. But although they objected to be dragooned he did not think there was any private objection, as a rule, to public authority, and, therefore, when they had at last obtained in the form of the County Council a most important and valuable municipality, he thought that to place in their hands a good deal of control was a wise measure. It was always found in this country that the responsibility which attached to the practice of control or authority was a very important consideration, and, although some of the public, judging from what was said in the newspapers, might have their objections to what had already been done by the London County Council, he thought that in the course of a few years it would be found that the sense of responsibility arising from carrying the load of authority would display itself in that case as in all others. As regarded London buildings, it seemed to be perfectly clear that very strict authority should be placed in the hands of someone, and the County Council had at their right-hand a large body of more or less distinguished architects and practical men in whose hands the details of administration were placed by the legislature, so that the County Council was well-advised, well-represented, and therefore entitled to the confidence of the public. That was as regarded construction, in respect of the points which Dr. Longstaff had very clearly made out. He thought the question of the administration of matters of taste in London metropolitan buildings

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* Spelt "stories" in my edition dated 1758.—G. B. L. The foregoing is Dr. Longstaff's note; to which we may add that "stories" is not only the ancient but the *correct* spelling, etymologically; the "storeys" adopted in the Building Act is a modern variation not sanctioned by the traditions of the English language. There is no more reason for it than for writing "countrey" and "countreys" instead of "country" and "countries."—Ed.

† "Utopia," Bk. II.

was one which deserved very serious consideration. Every architect who had been trained in the practice of architectural design would, he believed, agree with him when he said it was very hard that in London so much money should be laid out so frequently in building without any regard to public taste. The display of metropolitan building in all countries had always been a very powerful agent in humanising the people at large, and when they came to a town like London, as the centre and head-quarters of an enormous Empire, surely there ought to be in some quarter or other a very emphatic order of things as regarded the beauty of the town. He would venture to suggest whether it was not the common-sense of the matter that the expense of beautifying the metropolis of England ought to some extent to be borne by the public revenue. Why, he asked, should it fall wholly upon the accidental inhabitants of the town? Whether they should entrust the control of such a matter to a municipal body was a question which they probably should not discuss that night, but it was a matter which ought to be discussed. That was certainly a subject which could not be introduced into the Building Act of London. That Act must be a statement of the minimum requirements which were necessary in building private and public edifices, and directly they got beyond the minimum of necessity they found that the lawyers would not support them. There was a fixed principle in the English mind that every man should do as he pleased with his own, subject only to the absolute necessity of interference on the part of the public. As regarded the amendment of the Building Act which Dr. Longstaff shadowed forth, it would be well not to precipitate anything. They had got a very good Act, and although people might quibble at the language of it, yet, on the whole, he was of opinion that when they were able to understand it pretty clearly, it would work very well, with the assistance of moderation and human kindness on the part of the District Surveyors. But to administer such an Act with severity was a thing which he should deprecate with the utmost power at his command. It was not a system of rules which would bear to be interpreted in a harsh or arbitrary manner. It must always be remembered that the law was made for man, and not man for the law; and most emphatically was that the case when they came to such a matter as the Building Act.

Mr. R. Roberts, L.C.C., seconded the motion. He said that Dr. Longstaff had referred to the question why beautiful architecture should be confined to our churches and to our public buildings, and why our homes should not be delightful architecturally. He (Mr. Roberts) had always felt that that ought to be so. The buildings in which most of them lived had not been designed by architects, and, he thought he might add, had not been built by builders in the proper sense of the term, so that neither architects nor builders, properly speaking, were responsible for the present condition of London. He thought something should be done with regard to what he called the beauty of London. He was not sure that English people were either an artistic people or an architectural people, but he hoped the general public were beginning to take a greater interest in architectural matters. Dr. Longstaff referred to the Architectural Room at the Royal Academy. The little incident which he mentioned showed, he thought, that the general public did not, unfortunately, take an interest in architectural questions. Even our distinguished architects were not before the public eye as our distinguished painters. He should have been glad to have seen some architect of distinction come forward as a candidate for the London County Council. They lacked very often advice on architectural matters, which would come from one whom the architectural profession would recognise as an authority. The London County Council was constantly dealing with architectural questions. They had, for instance, large engineering schemes to consider. With regard to the design of bridges, they had indirectly consulted the Royal Institute of British Architects, and the consultation, he believed, had been very satisfactory. He was one of those who would wish never to see another iron bridge on the Thames. He would be glad to see stone bridges, but the engineering feeling was too strong for them; and, in fact, in these days of scientific development—he was going to say genius seemed to go in a scientific direction—the scientists were pressing them in all directions. The other day it was proposed to put a galvanised iron casing on the cornice of Waterloo Bridge 10 in. by 6 in. If they had had an architect on the Council, or someone representing architecture as a profession, he thought they would have been greatly helped in such a matter as that. He had, perhaps, dwelt too much on this question of beauty with regard to local administration, but he felt it was a question which was continually pressing. There was a tendency nowadays simply to look upon the vested or private interest side of all matters. It was a question of what dividend would be paid, what return would be given, and how much would it cost the ratepayers. For instance, the County Council was now housed in a miserable building which was not a credit to the London Municipality, but they could not have a better, because the ratepayer cried out. When it was a question of sanitary reform the ratepayer was always willing to pay, but the Englishman was not yet sufficiently educated to pay for beauty. Professor Kerr had expressed the opinion that London improvements should, to some extent, be a matter of national expenditure rather than municipal. Well, there was a little departure in that direction. Parliament-street was to be made at the cost of the whole nation. But perhaps that was not a thing to proclaim upon the house-top, because the representatives of London were a very small proportion in Parliament, and it was quite possible that objection might be made to an expenditure of funds from the whole nation for the purpose of a single municipality. To return to the Building Act, he quite understood Professor Kerr's argument that there should be no immediate change in the Act before the District Surveyors had been able to master its provisions. Certainly he for one did not wish that they should have another voluminous Building Act to go through. But it was remarkable, as Dr. Longstaff had pointed out, how one or two of the clauses which had proved in practice not to be very workable—especially that clause with regard to the separation of dwelling-rooms above trade premises—had slipped in, and was not objected to by the Architectural Association, which was supposed to have gone so carefully into the Building Act, by the Royal Institute of British Architects, by the Surveyors' Institution, and apparently by all the specialists. They unfortunately ran adrift on the question of vested interest, and the cry was "property, property." This particular clause, which he thought was too drastic, and which he was sure if it had been pointed out to Dr. Longstaff would have been amended, was, as far as he knew, not objected to by anyone. That showed how even specialists might fail to see some of the most important Clauses of the Building Act, and so surely they would forgive the Committee who, generally speaking, were merely laymen, if they had not foreseen everything that might occur under the Building Act. He hoped the Act would, as he believed it was, be generously administered by District Surveyors. He thought there was a great deal in the *personnel* of District Surveyors in these matters. In these days of over-inspection perhaps it was important that the District Surveyors should administer the Act with a generous consideration, that was that they should think rather of the spirit than the mere letter.

Mr. Henry Lovegrove referred to Clause 74 of the Building Act, and said he wished they could have some decision on a well-devised case for the guidance of District Surveyors. Scarcely a day passed but someone called upon him with reference to Clause 74. In each individual case he tried to do what was in accordance with the law, and if those who called upon him did not care for that he told them that they must go before the magistrate. He was not about to give an opinion as to whether there should be parapets upon all buildings, but he thought it was the height of absurdity to ask a builder to build a parapet 15 in. above the roof to adjoining water-closets. About 9-in. walls to domestic buildings, if a building exceeded two stories in height, only one floor could be of 9-in work. He thought that was an extremely good provision, because if they had two stories on a three or four story building of 9-in. work, there would certainly be an element of weakness. Dr. Longstaff remarked about the gravelly site, but he was afraid they did not come across gravelly sites in the inner parts of London. It was his fate very frequently to come across made ground. Everyone agreed that sky-signs were a source of danger to the public. Some people thought there was a great hardship in many cases in a board 2 ft. 11 in. being allowed to remain, while a board 3 ft. 6 in. had to be licensed. He thought there might be legislation on the subject before long. Mr. Roberts touched upon the question of having architects on the County Council. On the present County Council there was certainly one architect—Mr. Emden. Dr. Longstaff suggested that District Surveyors should, where possible, try to settle questions themselves. He very rarely went to Spring Gardens, and if District Surveyors only tried to act in accordance with the spirit rather than with the letter of the Building Act, they might give satisfaction to the persons building and do their duty to the public.

Mr. E. Woodthorpe said the Building Act had a great amount of good in it, but he could not quite agree with Professor Kerr that it was so easy of interpretation if they only considered it long enough. Part VI. of the Act was supposed to deal with the construction of buildings, and one of the most important matters in the construction of buildings he took to be safety. In this respect District Surveyors had practically little or no control, except in the case of bressummers and piers supporting bressummers adjoining party-walls. A pier at the corner of a building or a column they had little or no control over without reporting it as a dangerous structure. He thought that was a want in the Act which at some future time might be considered. Another point not dealt with in the Act was with regard to stones. There were a great many kinds of stones which were totally unfit to be used in this atmosphere. During the last three weeks he had had something like eleven pieces of stone brought to him by policemen which had fallen in different thoroughfares in the City. He had no power whatever over a stone unless he could go and condemn the whole building as dangerous. Another question which the County Council did not consider, although he drew attention to it some time before the Act came into force, was the exemption of by-laws in the City. Sometimes they had jerry builders in the City, and they had no power whatever over materials, or to compel a man to put a damp-course or concrete over the bottom. Some buildings were very unhealthy in consequence. Of course it was very difficult to make a Building Act do for the whole of London. With regard to the insertion of Section 74, his recollection was that it came originally from the Institute in connexion with a Bill on which the Institute, and Mr. E. T. Hall especially, spent a great deal of time. He (Mr. Woodthorpe) pointed out at the time the serious danger from fire in cases where the lower part of a building was occupied for trade purposes and on the upper floors there were hundreds of people sleeping. He would be sorry to see that clause struck out, because he thought there would be a great amount of risk run in consequence. He remembered a case in the City where a fire broke out on the first floor, missed the second, and burnt out the whole of the upper part of the building. There happened to be an opening in the party-wall, fitted with double iron doors, which by some authorities might not be considered in strict conformity with the Act, and about thirty girls, who were at lunch at the time the fire broke out, escaped through the opening, and there was no loss of life at all. An irregularity might therefore be a good thing sometimes. With regard to Section 53, as the law now stood a District Surveyor had no power to make a man do anything to an old party-wall if it was not taken down to the extent of one-half or altered. He ventured to think that with a slight alteration that clause could be made to convey what no doubt was the intention of the Act. Instead of saying, "Subject to any by-laws of the Council made in pursuance of this Act, walls shall be constructed," it should read, "Buildings shall be enclosed with walls constructed, &c." On raising that point he stated to counsel, "Supposing the whole of Cornhill were pulled down building by building, and there was only a wooden partition between each of those buildings, do you mean to contend that I should not have power to have that taken down, and make them build a party-wall?" Counsel clearly stated that he should not have that power, and the magistrate also took that view. So that from this opinion (although counsel, and magistrates as well, were not always right) it would appear that unless the party-wall was dangerous, or taken down to the extent of half, or interfered with, or dangerous, or any other clause of the Act were contravened, it would be difficult to compel a man to take down an irregular party-wall and rebuild it. Mr. Woodthorpe had very great pleasure in heartily supporting the vote of thanks to Dr. Longstaff for his great trouble in preparing the paper and for his kindness in coming down to read the same.

Mr. J. Marsland said Mr. Woodthorpe occupied a very peculiar position as one of the District Surveyors of the City of London. Most of his remarks were applicable only to the City, and not to general buildings in London. The Building Act Committee were quite willing to ask Parliament for as

much as they could get, but there was one thing they could not ask Parliament to do, and that was to interfere with the City of London. Therefore, they had been obliged to leave all these little anomalies referred to by Mr. Woodthorpe. The fact that the Act was contradictory here and there was due to the haphazard way in which the Legislature dealt with private Bills. How the Building Act emerged from the Committee-room in any sort of form he hardly understood, and until they got a better way of dealing with private legislation in the House of Commons he was afraid Bills would have mistakes which would have to be remedied afterwards. He did not think that Clause 74 was so hard in the case of a new building; in fact, he thought it was fair and reasonable. But further on the Act directed that buildings should not be joined together or added to unless they were brought into conformity with the Act. That was a stringent provision and pressed hardly on owners of trade premises. Within three years of the passing of the Act a client of his had erected a substantial trade building, and he could not now add another piece to it because, to bring it into conformity with the Act, such an expense and amount of inconvenience would have to be incurred that was quite prohibitory.

Mr. Bernard Dicksee said he partly agreed with Mr. Marsland regarding the operation of Clause 74 in new buildings; but he would be extremely sorry to see it removed or rendered in the least degree less stringent. As Mr. Marsland pointed out, in some cases—for instance in alterations and additions to old buildings—it did press rather hardly; there was, however, a way out of that difficulty. Section 207 gave the Council power to relax that as they thought fit, and within the last week or two they had done so in the case of a building in his district. They ran much greater risk of danger to life by fire from the alterations and connexions of buildings than from the construction of new ones. Personally, he thought that a man might be allowed to connect buildings provided he put in iron doors, and left proper exits in each individual case. At the present moment District Surveyors were obliged to see that the buildings were entirely in conformity with the Act, and this might mean practically reconstructing the whole of the buildings. When Dr. Longstaff had something to do with the amendment of the Act, there was an anomaly existing at the present time to which he hoped he would give his attention, and that was the interference that the Vestries had in the construction of waterclosets, &c. He thought all the points of construction of buildings, whether from a sanitary point of view or from any other point of view, should be placed entirely under the control of the District Surveyor. Section 13, Part II. of the Act, placed buildings intended for the occupation or adapted for the occupation of the working-classes under certain restrictions. He wished to ask what Dr. Longstaff considered a building adapted or constructed for the occupation of the working-classes, because in a court about 10 ft. wide a building for the working-classes must not be higher than the width ot the court, whereas if it was not a building for the working-classes it could go up possibly 80 ft.

Mr. Francis Hooper remarked that London was rapidly being reconstructed, and if they could but take advantage on every opportunity of some well-considered plan of alignment, each rebuilding would tend to the improvement and beautification of London. If they went into certain districts they were simply disheartened with what was being done by builders and speculators in the way of embellishing our streets. On the other hand, if they visited the Cadogan, the Grosvenor, the Norfolk, and other estates, they there saw the lines of frontage being amended and substantial buildings being erected. Would it not be possible for a central municipal authority to have the same control of our public streets as large private owners have of their property? He referred to the system in force in Paris, where every frontage line was planned, and where every man rebuilding must conform to the amended line laid down. It was found in many cases as too slow, but it was sure, and having been in operation for one hundred and fifty years, they now saw the result of ordered streets, which were conspicuously lacking in London, except in some few isolated instances. One of the gentlemen present referred to the advisability of electing architects on the County Council. Some architects had offered themselves for election, but the same gentleman had told the meeting that architects were not popular as a body, which accounted for so few being elected. He questioned whether they would all be satisfied to leave their affairs architecturally in the hands of anyone who was elected for his politics. It had often occurred to him how desirable it would be if the various committees of the County Council had power to invite for conference representative architects, such as the members of the Art Standing Committee of the Royal Institute of British Architects, after the manner of the "Conseil d'Architecture" in Paris, and that, as Professor Kerr had suggested, matters architectural should be looked upon as of national, or at any rate of municipal, interest.

Mr. F. T. W. Goldsmith said he supposed the members present might take the remarks of Dr. Longstaff as indicative of the spirit in which the new building regulations had been conceived and should be carried out. He was sure Dr. Longstaff would forgive him for making the suggestion that the County Council might appoint some gentlemen in the profession as Aldermen. That would be an act distinctly consonant with the views expressed by Dr. Longstaff, Mr. Roberts, and others. The County Council could do a great deal in popularising architecture, and he thought Dr. Longstaff had expressed the views of those on the Council who were inclined to consider matters artistic.

The President said he was sure he was only stating what was already well known, that the many excellent removals of disabilities from the old Act were very largely due to Dr. Longstaff, and he thought Mr. Roberts also must have some credit for them. As architects, they were exceedingly glad to welcome the increased latitude which was given them by the new Act, and he hoped the County Council would themselves take a little interest in getting those disabilities removed from the by-laws which existed in the immediately surrounding districts of London. He was bound to take a little exception to what both Dr. Longstaff and Mr. Roberts said about the 74th Clause. They both stated it as a point of omission on the part of irresponsible opponents that that clause had been entirely passed by, but he thought that on a little consideration of the point they would find that that was not the case. The clause was considerably altered by the irresponsible opponents, and if it had been altered as suggested by them the hardships would have been removed. It was exceedingly pleasing to hear from Dr. Longstaff's erudite paper that Sir Thomas More was an advocate himself for simplicity in architecture. They could not quite believe that Sir Thomas More's straight line was exactly on the lines of Gower-street, but he was quite sure that if they could have seen Utopia as he imagined it it would have been a beautiful and simple piece of architecture which they could all admire. Although he thought it would be a great advantage to the County Council and to architects in general that architects should be represented on the Council, he could not bring himself to think that an architect who had to give up his time to such absorbing work would be prosperous in architecture, and therefore he thought that it was a matter that only architects who had been through the mill and perhaps made their pile could really take up. There was nothing so absorbing as an architect's occupation. If he wished to be successful he must give up himself to that solely, inasmuch as it involved such an enormous amount of knowledge of all the other subsidiary arts. Dr. Longstaff gave them some very well-chosen words in regard to the question of beauty in our great towns, and dealt with the question of the possibility of having some committee of taste. He was bound to say that he would very much like to see the appointment of some committee of taste, but he felt that as things stood at present that was virtually an impossibility. The only possible committee of taste, it seemed to him, was the public, and so long as the Press, which was the natural mouthpiece and representative of the public, remained utterly indifferent to architecture they might be quite sure that their buildings would not grow up in the way they should like to see them. Therefore it ought to be their object as architects to accept Lord Beaconsfield's advice, and to educate "our party"—our party being the public; otherwise never to put up anything which was not truly fit to be a work of art even of the most simple description.

The vote of thanks was then passed with acclamation.

Dr. Longstaff, in replying, said that as his paper was a holiday effusion a little inaccuracy might be excused. This miserable clause, No. 74, was a clause that never interested him personally, neither did many of the fire reservation clauses. He put them in rather as the spokesman of the Fire Brigade, but he was greatly relieved at the result of the discussion, because he found he was not in any way responsible for Clause 74. The President had reminded him that he at all events did not let Clause 74 pass unchallenged. Well, he could only say it was because their President did good by stealth. He did not oppose this openly in the committee-room, but he went into the lobby with Mr. Blashill and the County Council's Parliamentary agent, and amended it there. Professor Kerr found the chief fault with the Building Act not from its provisions but because it was full of bad language. Now it was some satisfaction to him to think in one respect that if he was disappointed at the Bill as originally presented not passing into law, at all events he was not responsible for the bad language introduced by opponents. Professor Kerr had said that the Building Act Department of the County Council had resolved to interpret the Act always with a generous spirit. He hoped that was so, but they must not take it as an official statement that that was the case. Personally he had always endeavoured to act upon this principle. It had always been his endeavour when difficult points were brought before them to separate the essential from the non-essential. If a deviation were required, by which nobody would be one penny the worse, he had always stretched the Act to the uttermost to allow the thing to be done. If it appeared to be a matter where real principle was involved, then he had put his foot down firmly. A law of this kind was very much a law of precedent, and if they established two or three cases against them they could never enforce the Act in cases which were of greater importance. He agreed that the architects were not responsible for the hideousness of London, but now Mr. Roberts informed them that the builders were not responsible. If neither was responsible, he supposed they must go to the handy-man, who was responsible for constructing a great deal of London. Replying to Mr. Lovegrove, he thought Clause 74 went very early into the Court, and a very rigid interpretation was put upon it. He was extremely thankful that sky-signs were dangerous; it was the only good quality they possessed. If they were not dangerous London would have ten times as many of them as there were now. They were an abomination which must be removed at all costs. Regarding Mr. Woodthorpe's remarks, the question of the pier was considered. Mr. Marsland, Mr. Roberts, and himself tried to frame clauses which would deal with that and other kindred matters; but it passed the wit of man to find any form of words which would meet the difficulty. They therefore put in those mystic words, "to the satisfaction of the District Surveyor." As regarded stone, he was afraid that was a question rather of quality. Although it might be possible to preserve stone by covering it with lead, still he was not quite sure that that would suit his æsthetic sentiments or those of Mr. Roberts. It was a great deal a question of the selection of the individual stones, and he thought that was a matter they must leave to chance. As regarded the foundation, Mr. Woodthorpe must go to the Commissioners of Sewers if he wanted to have a by-law made—they were the responsible authority in the City. He believed it was true that the County Council did put in the foundations of some buildings a short time before the Act of 1894 came into force. Whether it was done in *malice prepense* or not he was not prepared to say, but if it was, all he could say was that the Committee concerned, very shortly after the Act came into force, had the question of whether they should comply with the provisions of the Building Act of 1894 before them, and they passed a self-denying ordinance saying that, although, by the kind favour of Mr. Littler, the County Council had been exempted from the operations of Part VI. of the Building Act, they would nevertheless submit themselves to the control of their own District Surveyors, and act just the same as though they were not exempted. He did not know whether Professor Kerr would put his view of the wide and generous application of the Act in conjunction with Mr. Woodthorpe's suggestion that people in difficulties in regard to Section 74 should make irregular openings in the party-walls. That was a suggestion he would leave to Professor Kerr. Mr. Marsland spent many hours of hard labour over the new Building Act, and if he went into the congenial retirement of carrying on his own profession in the south end of London and got himself into difficulties over Section 74, that was only poetic justice. One gentleman had foreshadowed an awful future for Dr. Longstaff in having to reconstruct his own Building Act. That was a

horror greater than he cared to contemplate. As far as he was concerned he would let the Act severely alone for some time to come, and anything in the way of reconstruction he did not contemplate for one moment. He did not think he could ever get beyond deleting the difficult or troublesome clauses. The question had been raised by Mr. Dicksee about some readjustment of business between the Vestries and the County Council with respect to water-closet windows. In that small matter a great principle was involved. There would be a great discussion on the *delimitation* of powers soon, and he knew that many of the Vestries would claim to have the whole of the Building Act transferred to them. Whether the Association would prefer that or not he could not say, but personally, he was inclined to be in favour of a compromising clause. Some minor matters might be transferred, but he thought that some of the great principles, such as the lines of frontage and the laying-out of new streets, should always be preserved in the hands of the central authority. Mr. Dicksee asked what buildings adapted for being inhabited by the working-classes were. Did Mr. Dicksee know anything about the definition of an archdeacon? He thought that some study of that celebrated definition would perhaps enable him to come to some conclusion upon this point. If not he should recommend him to apply to the Council for legal assistance. Mr. Hooper had said something of the great virtues of large estates. There was no person who had a greater opinion than he had of the value of large estates to London, and he said this, not from any *à priori* ideas, but from the result of several years' experience of the administration of the Building Act. They had practically no difficulty in administering the Act in regard to large estates, but they had difficulty in *passing* it in regard to large estates. Mr. Hooper suggested, and it was afterwards alluded to by Mr. Goldsmith, that they should have co-optative architectural County Councillors. He thought there was a great deal to be said in favour of the suggestion that they should have one or more architectural aldermen; he would be very glad to get an architectural alderman. But he was not sure that that was a very easy matter. If the Association found some architect who had been such a success in his profession that he had retired while still in vigorous health and who was yearning for another occupation, on a private intimation of the fact he would suggest him at his next party caucus. He thought it was the desire of many members of the Building Act Committee that District Surveyors should try and look rather to the spirit and the intention than to the letter of the Act. He had never known of a District Surveyor being blamed for not carrying out the Act strictly, or because he had allowed people to make some slight technical divergence where no harm was done to anyone.

The President announced that the next meeting of the Association would be held on December 6, when a paper would be read by Professor Herkomer, R.A., on "Scenic Art."

Trinity Almshouses.

Before the meeting separated, the President moved the following resolution, which was passed unanimously:—

"That the Architectural Association, having learnt that the Corporation of Trinity House are about to make an application to the Charity Commissioners involving the demolition of the ancient buildings of the Trinity Hospital at Mile End, begs leave to represent to the Corporation of Trinity House and to the Charity Commissioners that these buildings are of great value to architects and architectural students as an architectural example of the period of Sir Christopher Wren, and that consequently their destruction would be a national loss. The Architectural Association therefore would request that any proposals in connexion with the Hospital may ensure the preservation of the buildings."

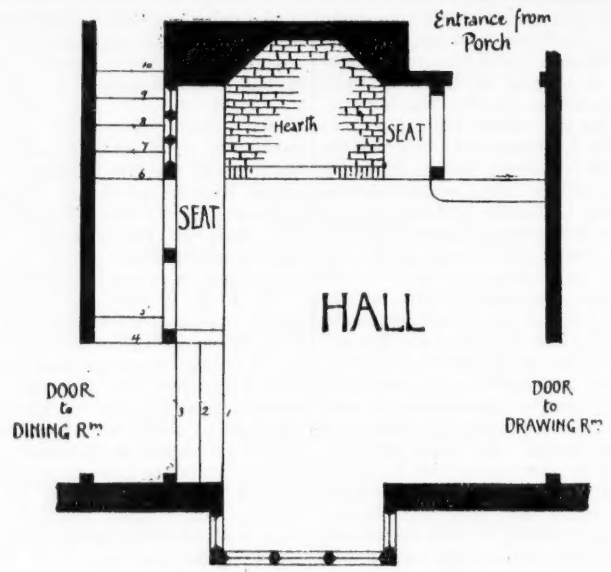
Illustrations.

CENTRAL HALL AND PUMP-ROOM, HARROGATE.

THIS drawing illustrates the Pump-room and General Assembly Hall of the new baths at Harrogate. The several suites for ladies and gentlemen, the Turkish bath, winter garden, cooking and refreshment rooms, &c., are all entered from this central appartment, which it is proposed to richly decorate with colour.

Plans and other drawings of the building have already appeared in the *Builder* of August 2, 1890, and a general view of the building under date May 9, 1891. The architects are Messrs. Baggallay & Bristowe.

The drawing from which the illustration is taken was exhibited at the Royal Academy this year.



Hall in a Country House.—Plan.

COUNTRY HOUSE AT BEDFORD:

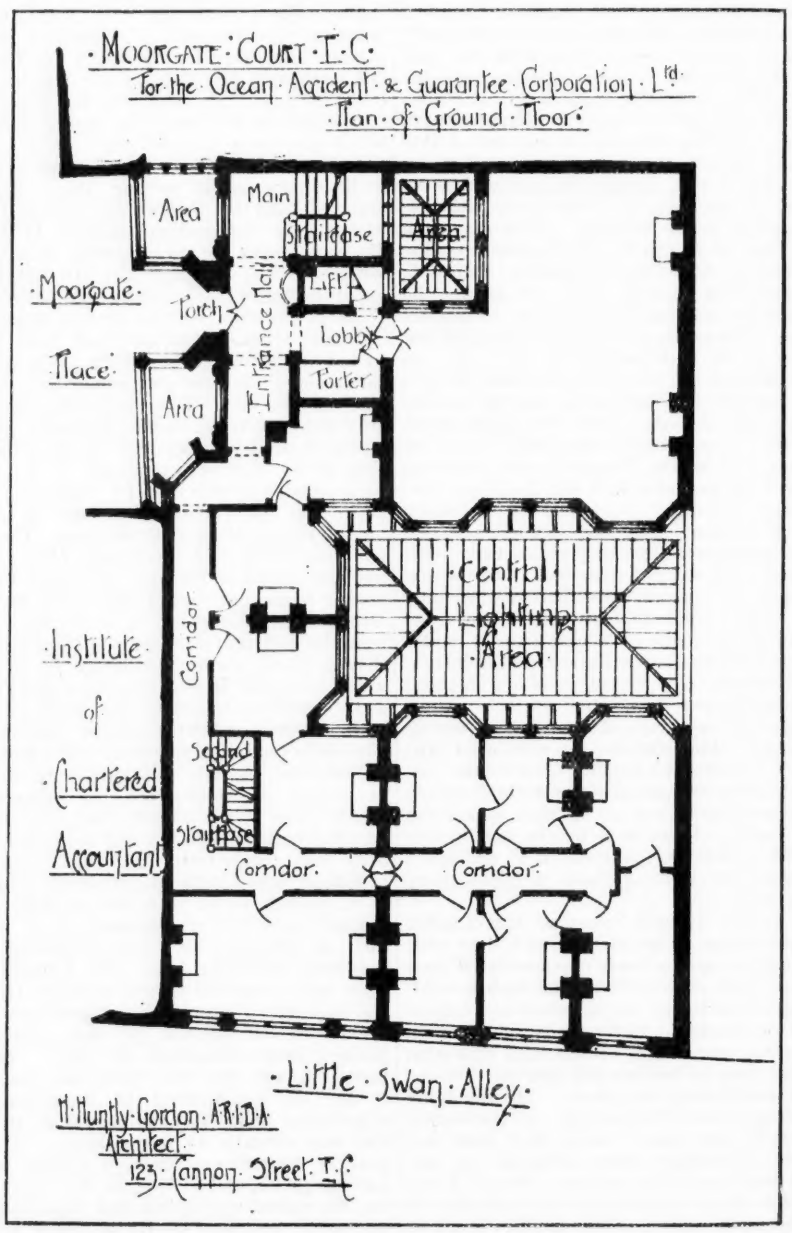
THE HALL.

THIS hall forms the central feature of a small suburban house with two other sitting-rooms and five bedrooms.

In the general treatment a broad, homely character has been aimed at, and an effect of simplicity and comfort has been held to be preferable to chill magnificence.

The hall is carried up through two stories with a gallery as shown, and opposite it is a lofty mullioned window, which extends from floor to ceiling and faces the south.

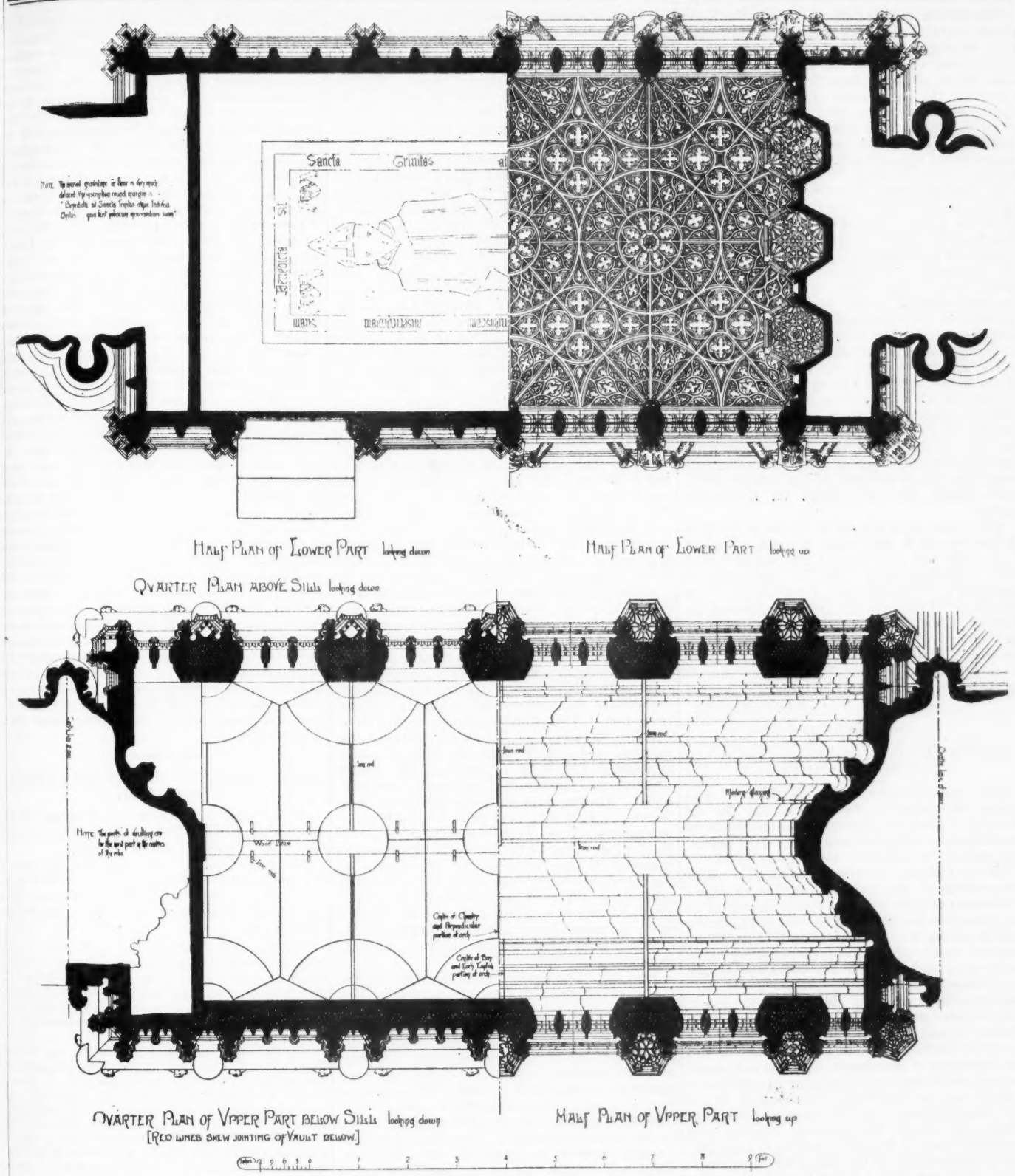
This drawing was exhibited in the Royal Academy this year. The architects are Messrs. Baillie Scott & Seton Morris, of London.



MOORGATE-COURT AND 123, CANNON-STREET.

THE drawing which we reproduce to-day was exhibited at the Royal Academy of 1894.

The larger building represented is the main entrance-front of "Moorgate-court," towards Moorgate-place, and adjoins the Institute of


Sancta Trinitas
Half Plan of Lower Part looking down
Half Plan of Lower Part looking up
Quarter Plan above Sills looking down
Quarter Plan of Upper Part below Sills looking down
[Red lines show jointing of Vault below.]
Half Plan of Upper Part looking up

Plans of Ramryge Chantry, St. Albans.—Measured and Drawn by Mr. P. Rider Smith.

Chartered Accountants. The architect has intentionally adopted a style and material as far as possible differing from that of the Institute of Chartered Accountants, so as in no way to clash therewith.

The front is built with hand-made red-bricks, six to the course, and with special grey terra-cotta made by Mr. S. H. Leech, of Harroway Works, Battersea. The architect has aimed at obtaining a building of subdued colour and without the appearance of newness.

The building has been erected for the Ocean, Accident, and Guarantee Corporation, Limited, and contains over 100 offices; there are two basements, and in the lower one the Stock Exchange official list is printed.

The building throughout is of concrete and steel fireproof construction. The principal internal feature is the marble staircase, which has been executed by Messrs. Farmer & Brindley; the entrance-hall, which forms part of the scheme, was illustrated in the *Builder* of June 22 of this year. The treads and risers throughout are of Piastracia marble, the wall-filling up to the top of the dado is of "Verte di Ferrato," the remainder of the filling is of alternate bands of "Pavonazzo" and "St. Ambrosia di Verona," 9 in. and 3 in. wide respectively; the balustrading is of wrought-iron work and brass, by Messrs. Jones & Willis. In addition to the principal staircase, there is a subsidiary one, and the floors are served by Messrs. Waygood's lifts, on their patent water-saving principle, by which the amount of water used is proportionate to the number of people raised.

The buildings were erected by Messrs. Perry & Co., from the designs of Mr. H. Huntly-Gordon.

123, CANNON-STREET.

This building is the property of the architect, Mr. H. Huntly-Gordon, and was built by him for his own offices. The front is built in red-rubber brickwork and grey terra-cotta, and the interior is fitted in a unique manner, especially Mr. Gordon's private office.

CHANTRY-TOMB OF ABBOT RAMRYGE, ST. ALBANS CATHEDRAL.

THIS fine example of Perpendicular work was erected early in the sixteenth century as the chantry-tomb of Thomas Ramryge, thirty-seventh abbot of the Abbey of St. Albans. Very little is known about him, all the records of his rule and work having been lost or destroyed. He was elected Abbot in 1492, eight years after the death of his predecessor. The date of his death is uncertain, but was probably about 1523, when Cardinal Wolsey was appointed Abbot. Weever says "He was a pious man, beloved of God and man, and his name was celebrated for his good works to posterity." The arms borne by Abbot Ramryge were:—"Gu. on a bend *or* between in chief a lion rampant and in base a ram courant *arg.* attired or three eagles displayed *vert* armed of the first." This occurs on several of the shields in the lower panels impaled with the Abbey arms.

The chantry, built throughout of the soft stone known as "clunch," contains a profusion of delicate carving which, where not mutilated, is as sharp as when executed. The fan-vaulting is supported by iron rods fastened to a timber-beam which spans the bay of the choir, under which the chantry is situated; the upper part is also stayed by iron rods built into the masonry of the arch.

The shields on the main cornice, in the lower panels, and also in the interior, have as supporters rams wearing collars bearing the letters RYGE, thus forming a rebus on the Abbot's name; the same letters preceded by a ram's head are also carved on the battlements of the transom. At the top of the panelling, just above the cornice, is an inscription with quaint lettering which is commenced on the side next the aisle and continued on the opposite side next the sanctuary, as follows:—SANCTI SPIRITVS ASSIT NOBIS GRACIA VENI SANCTE SPIRITVS REPLE TVORVM CORDA FIDELIVM ET TVI AMORIS IN EIS IGNEM ACCENDE AMEN. The door, which is of later date than the rest of the work, is inferior both in design and workmanship; on the rails is painted the following inscription; — "Anno Doni MDCLXXViij. Ego dixi in dimidio dierum meorum vadam ad portas inferi." The exterior spandrels of the doorway contain carvings representing the martyrdom of St. Alban and the scourging of St. Amphibalus.

The chantry contains the remains of several of the members of the Ffarington family of Lancashire, to whom it was granted as a burying-place on condition of their keeping it in repair, and the date 1678 on the door probably records the time of the first interment. In memory of these more recent occupiers of the tomb there are painted on the lower part of the interior-walls, coats-of-arms, and inscriptions on ribbon-like scrolls.

The monumental slab of the Abbot in the floor of the chantry is very much defaced, the effigy being only just visible, and the inscription is now undecipherable, but is recorded in Chauncey's "History of Hertfordshire," as follows:—"Benedicta sit Sancta Trinitas atque Indivisa Unitas Benedicamus ei Quia nobiscum fecit misericordiam Amen." In the four corners are shields bearing the Abbey arms impaled with three eaglets on a bend, two of the shields supported by rams and two by birds.

P. RIDER SMITH.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

THE first of the winter meetings of this society took place on the 19th inst. at the old Mercers' School, 20, College-hill, previous to its demolition. A visit was also made to the adjoining church of St. Michael, Paternoster Royal.

Mr. J. Douglass Mathews here read a paper and described the church. In Dr. Sharpe's "Calendar of Wills" he had found an extract to the effect that in 1292 Taillon had bequeathed a sum of money for the maintenance of chantries, and wax for the church, and for providing shoes for the poor of London. The street now known as College-hill was formerly called "La Reole," from merchants from La Reole, near Bordeaux, who established themselves there. The second church erected on this site was built by Sir Richard Whittington. In 1411 he granted land for rebuilding of the church. In his will, made in 1421, he desired to be buried in St. Michael's Church, and he instructed his executors to sell his dwelling-house in this parish, and other lands, and devote the proceeds to pious and charitable uses. In 1432, Gerveys, a grocer, left a tenement next to the college for the enlargement of it, and also a parcel of land, with alley adjoining, on the north side of the church, for the purpose of a new burial-ground in place of the old one, in conformity with the wishes of John Carpenter, the well-known City benefactor. There was a record that the church was restored in 1630 at a cost of £120. 9s. According to Stow, Whittington was buried three times in the church; first by his executor under a fair monument; then in the reign of Edward VI., the parson of the church, thinking some great riches were buried with him, caused the monument to be broken open, his body to be despoiled of its leaden sheet, and then again buried; and thirdly, in the reign of Queen Mary, the parishioners were forced to take him up again and wrap him in lead as before, and bury him. There he quietly rested till the Great Fire of London. His burial place was believed to be at the north-east side of the church. The church and college founded by Whittington were closely associated, the master being the rector. The fifteenth century church appears to have been entirely demolished after the Great Fire in 1666. He believed the new church was built on the site of the old one, as the size of the land was almost identical. There was nothing of special interest in the design. It was similar to most of Sir Christopher Wren's churches in narrow streets, viz., the exterior was very plain, but the tower was surmounted by one of the most graceful lantern steeples that Wren ever designed, and he greatly rejoiced that, as it was not one of the condemned City churches, the steeple might be preserved for many years to come. The interior was on the same plan as many of the smaller City churches. It was entirely remodelled about thirty-five years ago in an excellent manner by Mr. Butterfield.

The company then returned to the old Mercers' School, to inspect some old pewter vessels lent by Alderman A. R. Rayden, J.P., and photographs of pewterers' marks, which were displayed on the walls. The Master of the Mercers' Company, the Rev. — Sutton, presided.

Mr. Charles Welch read a paper on "Old Pewter Vessels," and said the interesting specimens before them were kindly lent by Mr. Alderman Rayden; they were dredged up from the bottom of the sea off Birchington, early in the present year, north of the Reculvers, inside the last buoy; the two smaller specimens being found within the larger one. During their stay in the water, the maker's marks had become defaced. The practice of the Pewterers' Company differed from that of the Goldsmiths', which required all goods exposed for sale to be brought to Goldsmiths' Hall to receive that company's stamp or hall mark. The Pewterer's Company had a hall mark, but it was only affixed to the better class of pewter ware, as far as he knew. The compulsory registration of makers' marks was enjoined by an Act of the 19th of Henry VII., A.D. 1504. The British Museum has nothing to approach in antiquity the vessels then exhibited before them, and among the specimens in the Guildhall Museum there were very few of so early date. These vessels were provided with lids, although the larger one is now only perfect in this respect; this one holds six pints, and is 11 in. high. The handle is of very graceful shape, and very ornamental. The next vessel is a miniature copy of the above, minus the lid, and evidently the work of the same maker, and holds a quarter of a pint. The third specimen is still more defaced, the whole of the upper portion being missing, and nothing but the lozenge-shaped attachment remaining to indicate the handle which it once possessed. It originally held half-a-pint. It was difficult to fix a date to these fine jugs. That they were made long before the compulsory system of marking became law in the year 1504, there can be little doubt. The character of the ornament, and the freedom of the decoration suggest the end of the thirteenth century, or the early part of the fourteenth as their probable date. With them was also found a brass lacquered bowl, which, although it has evidently been submerged many years, is of comparatively recent date.

Mr. John Watney next read a paper on the "History of the old Mercers' School." This school, it will be remembered, is the oldest existing school in London, and is governed by the Mercers' Company, its founders. It originally stood adjoining the Mercers' Chapel in Cheapside, of which building it formed a part, and was removed to College-hill in 1808. Many eminent men have been educated within its walls. It is about to be pulled down, as a new school building, having accommodation for 300 boys, has been recently erected in Barnard's Inn, Holborn, which was opened last year by Earl Selborne, a member of the Court of this Company. A description of these new schools appeared in the *Builder*, September 15, 1894, page 194.

THE LONDON COUNTY COUNCIL AND THE SESSION OF 1896.

THE "General Powers" Bill promoted by the Council relates to several objects, some of which we may enumerate as coming within our own province. For an improvement of the eastern approach to Lambeth Bridge they propose to acquire, by purchase or compulsion, a part of the churchyard of St. Mary's, Lambeth, together with a site bounded by High-street, Ferry-street, Lambeth-road, and the Albert Embankment; and to close Bunyan-place (which commemorates the meeting-house, near the parish church, in which John Bunyan is said to have preached): a similar improvement is to be made in respect of the southern approach to Wandsworth Bridge. High-street, Plumstead, will be widened, on its north side, by taking a portion of the parish churchyard: for a coroner's court and mortuary a site is scheduled at the rear of Devonport and Thornfield-roads, Hammersmith. The site of the "White House" tavern will be added to the open space known as Hackney Marshes; and certain lands are marked at Streatham (Babington-road) and Shepherd's Bush (Uxbridge-road) for fire brigade stations, and in Devonshire-street, St. Mary, Newington, for a gas-meter testing station. They also seek for an extension of time, now limited by the London Open Spaces Act, 1893, for the compulsory purchase of land in connexion with the acquisition of the York Water Gate (Buckingham-street), and the improvement thereof as authorised by that Act, and for a removal of the statutory restriction against the playing of music on any part of Highbury Fields. The Council's "Tramways" Bill provides for the construction of three tramways, in St. John's, Westminster, and Lambeth, to run to Upper Kennington-lane from the south-eastern end of Vauxhall Bridge-road, from Vauxhall Cross, and from the Albert Embankment. The gauge of these will be 4 ft. 8½ in., and the motive power that of either animals or electricity. Adverting to our "Note" (pp. 373-4 *ante*) upon the annual report of Mr. O. Claude Robson, District Surveyor, we find that the Council have drawn up a Bill to provide for the admission of sewage from Kilburn, Mapesbury, Kensal Green, and Harlesden — being parts of Willesden District adjoining the County of London—into the Metropolitan Main Drainage System; and to deal likewise with the sewage of any other part of the Willesden District that lies south of the summit-line or watershed dividing the waters flowing into the Brent Valley from the waters flowing towards the Thames. The Bill will prohibit the discharge of sewage from any part of the District into the Council's system otherwise than as stated above; it confers on the Council powers to prevent the same and power to enter upon and inspect any sewage works, sewers, and drains within the Willesden District, and to break up and open streets and roads therein; and will provide for the payments, annual or otherwise, by the District Council to the London County Council in respect of these matters, as well as of the District Council's past and future use of the Metropolitan Main Drainage System.

THE PROPOSED BUILDERS' CLERKS' INSTITUTION.

A MEETING of the proposed Builders' Clerks' Institution of Great Britain was held on Saturday last at the Westminster Town Hall.

Mr. A. J. Gomme took the chair, and after a few remarks he called upon Mr. J. P. Bowditch, secretary *pro tem.*, to read the following prospectus which had been drawn up relating to the Institution:—

"It has long been felt throughout the United Kingdom, that the clerks engaged in the building trade have been urgently in need of an Institution of this kind; and it has now become a fact that the Instituion has been definitely formed. The principal aims and objects of the Institution are as follows:—

1.—That the Institution will be for the mutual help, protection, support of interests, collection of knowledge as to state of trade, and to be of general benefit to all clerks engaged in the building trade throughout the United Kingdom; that those desiring a change can receive practical advice as to the state of trade in any part of the country; and to uphold the *status* of builders' clerks in general as to their *special* abilities in being *skilled* clerks, which places them in an entirely unique position as regards other classes of clerks.

2.—That a register shall be kept of all members out of employment, so as to facilitate their endeavours in obtaining situations whilst under notice or directly after, and also a register for employers who are requiring clerks to fill vacancies that they may have in their offices. The register will be accessible to both employers and members. The principal value of the register to employers will be to give them much less trouble and a greater certainty than heretofore by advertising, &c., to obtain an efficient and suitable man for their particular vacancy at an equitable wage with fair hours of employment, and to provide that every member, before being allowed to enter his name on the register, shall be of good character and efficient in the particular branch of the trade he describes himself suitable to fulfil.

3.—That head-offices shall be in London with branches in large central districts.

4.—That after offices have been obtained in London it is proposed that lectures and courses of instruction shall be given for members only, and examinations to be held periodically to test the abilities of those attending such classes.

5.—It is also proposed to form in connexion with this Institution a permanent sick benefit society and a distress fund for members when out of employment through no fault of their own.

6.—It is wished to be distinctly understood that this Institution is *not* formed in anyway antagonistic to employers, or as a trades union, but only for the

ideas previously stated; principally to keep up the *status* of the calling of this particular body of clerks, to assist men in making themselves more efficient, and for the general assistance of the members of the Institution. It will be the intention as far as it is known and practicable that only builders' clerks of good character shall be allowed to become members of this Institution."

A discussion then took place on some of the above-stated aims of the Institution. Several speakers desired to know if clerks employed in sectional trades—masons or slaters, for instance—would be eligible for election, and considerable difference of opinon appeared to exist on that point. It was pointed out that, seeing that in the north the building trade is divided into sections, the Institution could not exclude men engaged in the separate branches. They could not, in fact, make a rule for the southern counties and another for the northern. The only exception they ought to make was with manufacturers' or merchants' clerks. This seemed to be the opinion of the meeting, though Mr. H. G. Cottrell, a member of the Committee of the Birmingham Builders' Clerks' Association, said that they had decided in Birmingham to admit into their Association only men who were all-round clerks-of-works. After further discussion it was decided to leave the Committee to consider the question.

It was then proposed and agreed that the prospectus be adopted, after which Mr. Bowditch stated that he had already received seventy applications for membership. He also explained that it was hoped that the proposed lectures would be given by practical men, and that it was decided that if Clause 5 of the prospectus would clash with the excellent work which was being carried on by the Builders' Clerks' Benevolent Institution it would be dropped. In any case the Institution which they were forming could not attempt to start a sick benefit society for several years to come.

An informal discussion then followed, after which the meeting separated.

We cannot refrain from expressing the hope that future meetings of the Institution will be carried out in a more business-like manner, and that the proceedings will be commenced at the time advertised, and not an hour or more later.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION:

ELECTION OF PENSIONERS.

A SPECIAL general meeting for the election of two pensioners took place on the 26th inst. at the offices of this charity, No. 21, New Bridge-street, Blackfriars, Mr. E. C. Roe (Messrs. George Trollope & Sons) presiding, in the unavoidable absence of Mr. Charles Wall, the President. The election was a contested one, there being three candidates, viz., Mrs. Sophia Lovett, who polled 1,014 votes, Mrs. Helena Bishop polling 916 votes, and Mr. Jas. T. Gough 114 votes. At the close of the poll the Chairman announced that the successful candidates were Mrs. Lovett and Mrs. Bishop.

The amount of the widow's pension is 20*l.* per annum, and there are now (including the two widows just elected) twenty pensioners on the books. Votes of thanks were passed at the close of the election to Messrs. James Aynsley (Messrs. Carter & Aynsley), H. W. Parker, and James A. Robson, for their services as scrutineers, and to Mr. E. C. Roe for his able conduct in the chair.

THE GLASGOW BUILDING TRADES EXCHANGE.

THE first of the series of papers on subjects relating to building was delivered on Thursday last week, in the Building Trades Exchange, Gordon-street, Glasgow, by Mr. Keppie, of the firm of John Honeyman & Keppie, architects. Mr. Keppie gave a short *résumé* of the work the Exchange had done during the past year, and indicated new developments, which are intended to take place during the coming year. He called special attention to the sample department, which has already proved a boon, and which, were it enlarged and supplemented, might ultimately supersede the industrial exhibitions which take place over the country from time to time. The formation of a library of catalogues properly arranged, and easy of access, was also considered, and the directorate of the Exchange were agreeable that this suggestion should be carried out. The fact that all members were responsible to the directorate for the probity of their practice, and for conformity to specifications if membership were to continue, was also dwelt on; also the settlements of disputes between contracting parties, without the trouble and expense of litigation, and by those who from their position had the practical knowledge necessary for such settlements, which was considered a favourable feature. After this *résumé*, the lecturer went on to consider some points in connection with the Glasgow mode of measuring. He said surveying was not an imaginative profession, although in some instances it seemed to be considered such. Measurers should insist on getting a sufficient time to do their work thoroughly, and a sufficiency of drawings to thoroughly illustrate the designs they were asked to survey. He urged also the advisibility of coming to some understanding as to the time necessary for the completing of measurements, and the making of final payments for work done. He expressed surprise that such a scale had not up till now been drawn up, and indicated that it would be of great value to all the parties concerned. The loss involved in the breaking of such a rule should, he said, be borne by the infringers, and should not involve the contractor in the loss of the use of his money as it at present does.

A discussion followed, in which the following took part:—Mr. Goldie, Mr. Scott, Mr. Barclay, Mr. Howatt, Mr. Herbertson, Mr. McGilvrey, Mr. Walker, Mr. D. Paterson, Mr. Duncan, Mr. Marshall, and Mr. Carlton.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, in the County Hall, Spring Gardens, Sir Arthur Arnold, Chairman, presiding.

The Trinity Almshouses—Dr. Longstaff presented a petition from Mr. Ashbee and Sir Walter Besant asking the Council to use its influence to prevent the destruction of the Trinity Almshouses, Mile-end-road. The petition was referred to the Petitions Committee.

Mr. Roberts, later in the sitting, asked the Chairman of the Corporate Property, Charities, and Endowments Committee whether his attention had been called to the question of the almshouses, and whether something could not be done to preserve a building of so much historic and architectural value.

Dr. Napier, in reply, said a representative of the Council would have no *locus standi* at the inquiry which was to be held, and while he sympathised with the view that the destruction of the almshouses would be an act of vandalism that ought in every possible way to be resisted, still he did not see that any good would be done by the Council sending a representative to attend at the inquiry.

The Works Committee and the Cost of Work.—The debate was resumed on the adjourned report of the Works Committee, which gave the cost of 89 works * which had been executed by the Works Department.

Mr. Ward, Chairman of the Committee, said that he wished to say that the statement made last week by Sir John Lubbock, that when the work was put out to contract the lowest tender in some fifty cases averaged 6 per cent. below the architect's estimate, was correct.

Mr. Cohen, M.P., said that he wished to emphasise that point, so that the ratepayers might know that if the works reported upon had been carried out by a contractor instead of by the Works Committee there would have been a saving of about 18,000*l.*

Sir John Lubbock said that, as he had stated last week, had the work been given out to contractors under the old system there would have been a saving effected of 18,000*l.* instead of 600*l.* He also referred to the fact that the Committee, when it considered the architect's estimate insufficient, had the option of refusing to do the work, which was then undertaken by contractors; whereas under the old system the contractors took the works whether the estimates were high or low. He thought they ought to have a list of those works which the contractors had carried out after the Committee had rejected them, showing the architect's estimate and the actual cost of the work as carried out. He thought it would be seen from such a list that the works had been carried out at less than the estimate. While the report showed an improvement, he hoped that the Committee would soon agree that the experiment had been carried far enough, and that sufficient of the ratepayers' money had been spent.

* See the *Builder* for last week, page 379.

Mr. Burns, M.P., said that with regard to Sir John Lubbock's argument, he found that twenty-eight of the jobs to which he had alluded were above the estimate. Out of fifty contractors employed five failed. There was no doubt that the quality of the work of the Works Department was irreproachable.

Mr. White supported Sir John Lubbock's contention that a good deal of money had been lost in the past, and he believed the Works Department would never be a financial success until it was entirely reorganised. He was sure they would never be able to do work at a profit such as a contractor would make. If, as some contended, they were doing it now, then the difference between total estimate and total cost, instead of being a beggarly 600*l.* spread out over three years, ought to be at least 45,000*l.* The fact, of course, was that the contractor's profit was swallowed up in spite of all the advantages with which the Works Department started. His desire was that the Works Committee should be put upon a proper commercial basis, but he could not hold out to the Council the hope that under any circumstances were they ever going to secure for the benefit of the ratepayers the contractor's profit. If the Council put themselves in communication with the best class of builders they would secure quite as good results as they would ever obtain through the Works Committee.

Mr. Ward, in replying on the debate, said in analysing the accounts to which Sir John Lubbock had referred he found that nearly all the saving, which averaged 6 per cent. on the total number of works, was upon two of the jobs. In these cases the contractors made a very great mistake, and they were unable to carry out the work. At the present time the Committee were saving 11 per cent. as against 6 per cent. in the estimate. Another point was that the Committee had taken some works for a smaller sum than contractors would take them for. The high quality of the work was admitted on all hands, and he thought the Committee were entitled to claim that they had achieved success.

The report was then adopted.

The Council adjourned soon after 7 o'clock.

COMPETITIONS.

ARTISANS' DWELLINGS, KENTISH TOWN.—A competition was recently promoted by private enterprise for the best design for artisans' dwellings at Kentish Town. Forty-six sets of drawings were submitted, from among which those sent in by the following competitors were selected as the best:—1. Mr. Harry Heathman, Barnard House, Clarence-road, Redcliff, Bristol; 2. Mr. C. Pickford, 14, Great James-street, Bedford-row, W.C.; 3. Messrs. A. P. Killick and H. S. Wood, 16, Basinghall-street, E.C.; 4. Mr. W. G. Lewton, 44, Queen's Crescent, Reading; and 5. Mr. Valentine L. Knight, 21, Donberg-road, Blackheath. None of these designs, however, altogether met the wishes of the promoter, and it is therefore not intended to carry any of them out.

ARCHITECTURAL SOCIETIES.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The members of this Society visited the new Sheffield Royal Hospital on Saturday last, on the invitation of the President, Mr. Charles Hadfield, who is the architect for the building. Under Mr. Hadfield's guidance the party made a tour of inspection over the buildings. In proposing a vote of thanks to Mr. Hadfield, Mr. Wm. Parkin said that as a lay member of the Society he had been very much interested in all that he had seen, and especially was he pleased at the friendly feeling which the architectural profession in Sheffield exhibited. He did not suppose that in any of the local trades anyone would invite others in the same business to come and see his work.—The motion was seconded by Mr. T. H. Waterhouse, J.P., supported by Mr. T. Winder and Mr. C. J. Innocent, and carried unanimously; and on the motion of Mr. E. M. Gibbs, seconded by Mr. E. Winder, jun., a vote of thanks was passed to the board of management of the hospital for kindly throwing it open to the Society. The contractors for the building are:—Mr. Molloy, earthwork; Mr. Webster, masonry; Mr. Tomlinson, joinery; Mr. Rodgers, painting; Mr. Higgins, plastering; and Mr. Sutliffe (Messrs. Haden & Co.), warming. Mr. Buchanan, the clerk of works, assisted the architect in explaining the plans and the building.

GLASGOW SCHOOL OF ART.—A lecture on "Roman Architecture after Nero" was delivered in the Glasgow School of Art on the 25th inst.

by Mr. W. J. Anderson, being the seventh of his series on the History of Architecture, and the last lecture dealing with the Classic periods. By the aid of coloured maps of the Grecian colonies and Roman Empire at different periods, the lecturer showed how Rome, situated between an ancient Italian civilisation in Etruria and a Hellenic community in Campania, had borrowed its art expression first from Etruria, and then combined it with the Grecian forms, more and more assimilated as the Empire absorbed the Greek colonies and Greece itself. The result was the golden age of Augustus or what might be styled the Græco-Roman period. In a similar way the victories of Trajan brought a similar influence from Persia and the East into Roman art, less in degree, because the occupation was of short duration and the conquest less thorough. It was during the reigns of Trajan and Hadrian that Roman architecture culminated. The works of Appolodorus at the Forum of Trajan and the rotunda of the Pantheon itself, in the early years of the second century A.D., were the high-water marks of Roman art, which, though inferior to Grecian expressions, as the Roman art instinct was to the Greek, were a most wonderful reflection of the character and genius of the people of Rome. Just as the argumentative, superstitious, envious Greek, delighting most in life and strength and beauty, had written himself down in every detail of his temple architecture, so in Rome the organising, assimilating faculty of the Romans became a substitute for natural instinct and originality, and enabled them to rear some of the most splendid and impressive buildings of the world. Were the record of the deeds and works of Rome wiped out, such buildings would themselves give as clear an idea of the nature of her supremacy as we could learn from her history or literature. Even as it is, the most vivid and trustworthy record is in the architecture for those who can read it. Altogether seven art periods were distinguished in the history of Rome; the lecturer dealt specially with the last three—the Culmination, the Romano-Greek revival, and the Eclectic and declining period, each being illustrated by diagrams and photographs bearing on the subject.—*Glasgow Herald.*

ARCHÆOLOGICAL SOCIETIES.

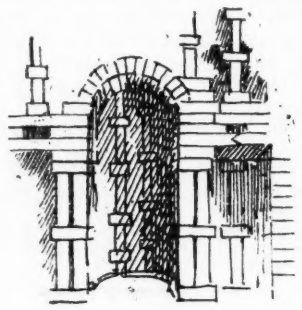
BRITISH ARCHÆOLOGICAL ASSOCIATION.—The second meeting of the session of this Association was held on the 20th inst., at 32, Sackville-street, Piccadilly, the Rev. Cave Browne, M.A., in the chair. A very interesting paper was read by Mr. Chas. R. B. Barrett, M.A., on "The Chapel of Lede or Lead in the parish of Ryther-cum-Ozendyke, Yorkshire." The Manor of Lede was in feudal times a tenancy of the honour of Pontefract, and is a detached portion of the parish of Ryther. Lede chapel stands in the middle of a field, unsurrounded by any wall. It is very small, its total length being only 18 ft. Rude oak benches line its sides, and it possesses a curious font of unusual design, apparently of older date than the building itself; there is also a dilapidated old parish chest. The chief interest of the little chapel appears to be centred in the four or possibly five body stones or slabs, each having incised armorial bearings on a shield—the arms of a long-forgotten family named Tiesci or Tyas. These four slabs lie together in a row at the eastern end, in front of the altar of the little chapel, but the altar-stone itself, marked with the five crosses, now lies on the floor, forming a portion of the pavement. Mr. Barrett illustrated his paper by some nicely-executed etchings and drawings of the slabs and the armorial bearings.—The Rev. V. H. Moyle, M.A., afterwards described the mural paintings he has recently discovered on the walls of Ashampstead Church, near Pangbourne, Berks, and illustrated his remarks by means of a large number of photographs. The whole interior of the church appears to have been decorated with paintings, and they date from different periods, being painted over each other, the oldest being of the thirteenth century. The chief subjects are the Crucifixion, the Overshadowing of the Blessed Virgin, the Visitation, the Nativity, and the Angels' Message to the Shepherds, and the Sunflower or Glory at the east end of the nave. These interesting paintings were thickly covered by coats of yellow wash, and are now gradually being revealed, after very careful and patient scraping, which Mr. Moyle himself is doing as opportunities allow. The discovery was made accidentally through the falling of a portion of the sham plaster ceiling in May last, owing to injury done to the roof by the severe weather of last winter.

Correspondence.

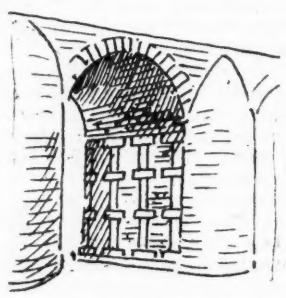
To the Editor of THE BUILDER.

SAXON "LONG AND SHORT" WORK.

SIR,—In connexion with the deeply interesting series of articles on "Saxon Architecture," now publishing in your columns, may I draw the attention of your readers to a paper on the subject by Sir Gardner Wilkinson, in the "Lincoln Diocesan Architectural Society's Volume for 1863-4," where he says:—"Whether the Saxons derived their mode of building direct from the Romans (in Britain) or indirectly from them it is plain that like its contemporaries, the Romanesque and the Lombard, the Saxon style was indebted for its characteristic and general



Semicircular apse built into the Roman temple of Dugga, Tunis, after its conversion into a Christian Church in the time of Justinian.



Bridge of late Roman date, Sufetula (now Sbaitla), Tunis.

features to the debased Roman architecture that preceded it, and I am inclined to think it was directly borrowed from it, as we find in no other architecture all the local peculiarities which distinguish it. The pent roof or triangular-headed arch so common in Saxon buildings was also derived from the Roman."

Your learned correspondent, Professor Brown, as I read him, appears to question the use of "long and short" work by the Romans, but two of the illustrations (copied overleaf) accompanying Sir G. Wilkinson's paper prove conclusively that they did occasionally employ it in at least one of their colonies.

G. H. ROWBOTHAM.

THE DISCUSSIONS AT THE INSTITUTE.

SIR,—I think it is to be regretted that the system of the Chairman calling on members to speak in the discussions, which was for a good while discontinued, appears to have been resumed as a regular practice. The natural result is that those who are not called upon from the Chair, especially if they are among the younger and less-known members, feel as if they were intruding in offering their remarks, and that we may thus lose observations which would be of interest.

It is impossible, except from some previous communication, that the Chairman should know what members have anything special to contribute to the discussion, and this was rather curiously illustrated at the last meeting (Mr. Murray's paper), when the two first gentlemen called on by the President practically admitted that they had nothing to say. The time they occupied in telling us so might possibly have been more profitably occupied by others who had something to say but could not get the opportunity, or who did not like to speak without being asked. I do not make the remark from any knowledge of such a case, but merely as suggesting a possibility.

Our present learned, courteous, and much-respected President is a gentleman who is so little likely to desire to impose his own rules on the conduct of a discussion, that we must conclude that the system of calling on speakers is favoured by the Council, and there may be reasons for it which outsiders do not realise. But it seems rather a bar to "free discussion," in the full sense of the word.

"ONE WHO IS NOT DESIROUS TO SPEAK."

AN APPEAL.

SIR,—For more than fifty years the Ragged School Union, in connexion with its 212 affiliated local centres, has been in contact with the members of the building trades. It also has a number of them—employers and *employés*—among its 6,000 voluntary helpers. I should, therefore, be glad if, in the *Builder*, you would allow me to state that we are now urgently in need of funds for meeting the varied needs of our 50,000 *protégés*. They are by us not only relieved, but trained throughout the course of their boyhood and girlhood in those habits with the aid of which they, instead of growing up helpless and useless, become able-bodied, clear-minded, and well-tutored citizens—helpers, not burdens on the community.

The smallest as well as the largest donations will be gratefully received. JOHN KIRK, *Secretary.*
Ragged School Union,
37, Norfolk-street, Strand, London, W.C.

The Student's Column.

METALS USED IN BUILDING.—XXII.

DURABILITY *(continued)*.

THE internal corrosion of cast-iron water-pipes is an important subject, concerning which we have yet a great deal to learn. Such "corrosion," as it is familiarly termed, may consist merely of an incrustation of mineral matter inside the pipes whereby the pipes are coated; or it may also in part be formed by the decay of the iron, to the detriment of the life of the pipe. Apart from the question of durability, we find the evil effects arising therefrom are—(1) loss of water-carrying space, and (2) loss of pressure. Elaborate investigations on this subject have been carried out, amongst others, by Mr. M. B. Jamieson, with special reference to the water-pipes of the City of Aberdeen.* To give some idea of the amount of such corrosion we may quote the following table from Mr. Jamieson's researches:—

Internal corrosion of cast-iron water-pipes.

No.	Age of pipe.	Internal diameter of pipe.	Amount of rust, per lineal yard.	Capacity of clean pipe, per lineal yard.	Percentage of space occupied by rust.
	Years.	Inches.	Cubic inches.	Cubic inches.	
1	20	3	63·84	254·44	25·0
2	29	3	86·94	254·44	34·1
3	38	3	110·44	254·44	43·4
4	29	4	182·37	452·37	40·3
5	22	4	244·37	452·37	54·0
6	14	5	180·00	706·86	25·4
7	15	7	190·00	1,385·42	13·7
8	15	10	240·00	2,827·44	8·4
9	40	15	1,320·00	6,361·74	20·7

The column headed "Age of Pipe" refers to the length of time the pipe had been placed in the ground prior to the investigations being carried out; the "Amount of Rust per Lineal Yard" was ascertained by filling the pipe with water, noting the quantity, deducting it from what the pipe should contain when clean; the remainder giving the required result. Nos. 1 to 6 refer to uncoated pipes; Nos. 7, 8, and 9 to pipes coated with asphalte. The effect of the coating is sufficiently marked, though we should not forget that so far as internal deposition (as distinct from oxidation of the iron) is concerned, the diameter of the pipes is an important factor. Nevertheless, it is remarkable that a pipe fifteen years old, with such water as is served to Aberdeen, should only have 8·4 per cent. of space occupied by the rust.

Another peculiar circumstance, not brought out, however, in the foregoing table, is that with a pipe of the same diameter the approximate amount of rust per lineal yard is in proportion to the age

* Consult "Min. Proc. Inst.C.E.," Vol. lxv. (1881), p. 327

of the pipe; at least, that holds good for pipes having a diameter of 3 in., 4 in., and 5 in. respectively.

Some attempt has been made to ascertain the effect of these internal accumulations on the strength of cast-iron pipes. A question of this nature it is next to impossible to solve definitely, because the contact of the outside of the pipe with the more or less damp earth in which it is buried leads to decay of the former externally in the majority of instances. In the case of the Aberdeen pipes referred to, it was found difficult with uncoated pipes to decide whether the strength of the pipe was affected more by the internal or by the external rust; but on inspection the inside of the pipes appeared to be in better condition than the outside, after the rust had been removed.

The chemical composition of the internal rust found in pipes through which soft water flows shows it to consist of from 35 to 40 per cent. iron oxide, from 40 to 43 per cent. insoluble sandy matter, the remainder consisting chiefly of volatile substances. This could not possibly be harmful to the quality of the water passing through; on the contrary, the mere fact of the deposit having taken place is to some extent indicative of the water being purified during its passage.

With hard water, no doubt, the principal mineral matter corroding such pipes would be carbonate of lime, and this would be mixed with a certain amount of iron from the substance of the pipe itself. On the coating once being formed it would act as a preservative, and if the pipes were constantly cleansed they would, in consequence, be liable to decay much more rapidly. As an illustration of the fact that rust-corrosion is proportional to the volume of water passing along a pipe and the commotion existing therein, it may be stated that whilst main-pipes, through which water is constantly passing, are often nearly filled with rust, their fire-cock branches through which it seldom flows (though they are constantly full) are comparatively clean.

Incidentally, we have referred to the rusting of cast-iron pipes in contact with earth. It is obvious, however, that the class of earth in which the pipes are embedded is a ruling factor in such cases. Where solid rock is excavated, it is well to ram pieces of the same rock round the pipe; the oxidation then taking place is only that induced by rain-water or leakage from the pipes themselves. If the pipes are buried in clay, we may be tolerably certain they will always be kept damp, especially in a low-lying situation. But it does not follow that, externally, they suffer much in consequence, as there is very little circulation of water in stiff clays, they being for all practical purposes impervious to water. On being laid in such a substance as chalk, the iron would have to be of very poor quality to become much damaged even through a number of years. In sand, however, and especially in gravel, they may decay rapidly, and on being dug up are often encrusted by compact stones and sand bound together by iron derived for the most part from the destruction of the pipes.

We will not go into the subject of the corrosion of boilers to any length. Everyone knows that boiler incrustation is induced to form primarily through the employment of hard water—water containing either the carbonate of lime or magnesia, or both. The scale is therefore lessened by softening the water. But certain forms of incrustation are really corrosion, the boiler-plates being ultimately destroyed, principally through the agency of acids whose power to do chemical work is enormously increased in such high temperatures. Professor August Wagner found * that both at ordinary temperatures and at the boiling-point, the presence in water of dissolved chlorine in such combinations as chloride of magnesium, of ammonium, sodium, barium, potassium, and lime is very destructive to the iron as soon as air is admitted. From this it follows that the addition of chloride of barium to feed-water is likely to be injurious to the boiler. The evaporation of spring water has less deteriorating influence than pure water, especially when by evaporation of the former a thin preservative layer of carbonate of lime is thrown down upon the iron. Of course, if the calcareous deposit becomes very thick it must be removed. Chloride of ammonium and sal-ammoniac solutions are especially to be avoided. The addition of oil or fat to the feed-water is not injurious to the iron, whilst it exercises a preservative influence against rust; but at higher temperatures than 212 deg. Fahr. it is probable that the fat or oil has an injurious effect. In this connexion it may be observed that acid oils for lubrication are generally credited with being the prime cause of the formation of lumps inside the cylinders of steam-engines; but Mons. A. Mercier found* that fatty oils, even if perfectly neutral, have a strongly corrosive action on iron in the presence of steam. He recommended the use of mineral oils, thickened, if necessary, with wax or paraffin, for the lubrication of the parts of engines working in steam.

In regard to the durability of zinc, although that metal oxidises more rapidly than iron, the oxide adheres with such tenacity to the metal that it affords efficient protection against the continuation of the process. To this property the metal owes whatever durability it may possess, the more so that its oxide is not soluble in water. In presence of any solvent of the oxide, zinc decays so rapidly as to be practically worthless. In pure water its durability is very great; the sun's heat is, however, peculiarly destructive to it, on account of its liability to greatly expand or contract during changes of temperature. Mr. Edwin Clark remarks† that the most important cause of the destruction of zinc in smoky districts is galvanic action. In such situations the particles of soot or carbon deposited on the zinc form one element, and the zinc itself another of a powerful galvanic couple; whilst the sulphurous acid and moisture of the atmosphere complete the battery, or rather the myriads of batteries, which cover the surface of the zinc plate. The durability of alloys of zinc are modified as they are made of more or less durable minerals than zinc. In certain cases it would appear that the perfect employment of the zinc engaged in the alloy practically neutralises that metal. If alloyed with iron the iron predominates; if with lead, the lead governs relative durability. That is, always providing that reasonable proportions of the iron or lead are used in the alloy.

The corrosion of zinc by water, and various saline solutions, has been carefully investigated by Mr. H. Snyders, ‡ who found that zinc decomposes both dilute and concentrated saline solutions without the intervention of free oxygen; water being decomposed with the formation of zinc oxide and liberation of hydrogen. Zinc oxide is soluble in 1 per cent., and even weaker saline solutions, the amount dissolved varying with different salts, being highest with those of ammonia. Both the hydrated oxide and carbonate of zinc are insoluble in carbonates. Zinc is more rapidly attacked when the solution contains oxygen free from carbonic acid, which has a direct oxidising action. In this case the saline solution only serves to renew the surface of the metal by dissolving away the oxide as it forms. On the other hand, the action of carbonic acid as contained in air has a slightly retarding tendency, due to the formation of a film of basic carbonate on the surface of the metal. The corrosive and solvent action is greatest with solutions of chlorides and sulphate of potassium, and less so with alkaline and barium nitrates and sulphate of magnesium. In all cases the solvent action increases with increase of temperature; at the freezing point of water it is very small. It is noteworthy that hard well-waters are without action on zinc, even when containing a considerable proportion of chlorides and sulphates. Soft waters, on the other hand, show a considerable solvent power, which increases in proportion as the sulphates and chlorides exceed carbonates and phosphates held in solution. This is another example of the corrosive power of soft water.

Lead is a most indestructible metal. It is not appreciably worn away by friction, though it practically flows under the tread. Leaden-pipes used at Pompeii for fountains and baths have not suffered deterioration, in spite of their having been buried for centuries. Nevertheless, lead slowly absorbs oxygen and carbonic acid in moist air, and is acted upon by certain waters, as explained when dealing with the subject of lead-pipes and their effects on the quality of potable water. Its great ductility renders it useful for a multitude of purposes, but that same property is in some instances a drawback. The bursting of leaden-pipes during frost would not be such a frequent phenomenon were it not for the facility with which the metal moves, molecularly, under pressure. The durability of such pipes is to a large extent dependent on their thickness and the relative purity of the metal.

In regard to copper, that also is a very durable metal, even more so than lead, though in a moist temperature it slowly oxidises, and a green carbonate forms on its surface. Paint adheres to it more permanently than it does to lead or zinc. The action of sea-water on copper used to protect submarine structures, in the form of sheathing, is important. The prime object of covering piling with copper is to prevent the adhesion of barnacles and the like to the substance covered. It is commonly supposed that the effect of sea-water on the copper produces some poisonous fluid which kills the crustacea alluded to; but that is not the case. The copper affords protection by the very fact of its decay. Barnacles adhere to it as freely as they do to either zinc or iron; but the chloride of copper which forms beneath the attachment being a soluble salt, the animals no sooner find a lodgment than they are set free by their own solvent power.

Brass and bronze, when of good quality, are as durable as copper; but the former is frequently adulterated to such an extent by iron, or is merely iron, coated with brass, that brown rust stains soon put in an appearance. Aluminium is remarkable for its durability. It does not oxidise in the air, or combine with sulphur; it is insoluble in cold nitric acid and in sulphuric acid; but hydrochloric acid and alkalies readily dissolve it. For all practical purposes, therefore, it is one of the most durable substances known. Nickel does not readily oxidise in air at ordinary temperatures, but when heated monoxide is formed. On the other hand, manganese oxidises more readily even than iron, and must, therefore, be excluded from air as far as possible. Tin is not much affected by air at ordinary temperatures, for which reason it is so extensively employed in covering iron-plates so as to preserve them; neither is antimony, but when heated in air antimonious oxide is formed.

* "Dingler's Polytechnisches Journal," Bd. 218 (1875), pp. 70-79.

* "Annales des Mines," 1879, p. 234.
† "Min. Proc. Inst.C.E.," Vol. xxvii. (1868), p. 560.
‡ "Berg- und hüttenmännische Zeitung," Bd. xxvii. (1878), p. 212.

GENERAL BUILDING NEWS.

CHURCH SCHOOL, BARKISLAND, HALIFAX.—A new church school, designed by Mr. W. Swinden Barber, of Halifax, has just been completed at Barkisland. It consists of two rooms, one 35 ft. by 21 ft., the other 18 ft. by 16 ft., and a lobby 18 ft. by 8 ft., all opening into each other.

KNOT MILL STATION IMPROVEMENT, LANCASHIRE.—Considerable progress has been made during the past few months with the new station buildings at Knot Mill, near Manchester. The main entrance will front Deansgate. The design is Gothic in style, and the material used is red brick, with carved stone facings. The building will be surmounted by a clock-tower. From this entrance—which is faced internally with dark-brown brick and a gold and brown dado—there is a slight incline, leading by an easy flight of steps, 15 ft. wide, into the booking-hall. To accommodate vehicular traffic, the approach will be from Gaythorn-street to the booking-offices by an incline of about 1 in 20. In front of these offices there will be a large awning, with wide footpaths on each side of the roadway. There will also be a shelter for cabmen. After leaving the booking-hall, a slight ascent and a wide staircase bring the passenger to a subway, from which the platform is reached by an easy flight of some nineteen steps. The platforms will be considerably widened, and raised so as to be almost level with the steps of the carriages. On the Bowdon side there will be a general waiting-room, as also waiting-rooms for the various classes of passengers, with ante-rooms and other conveniences. On the Deansgate side are the stationmaster's offices, ticket collectors' rooms, and ladies' and general waiting-rooms. The platforms will be covered, the roofing being of steel work. The street running parallel with the Rochdale Canal is to be widened 75 ft. The new buildings are from drawings provided by the joint engineers of the London and North-Western and Manchester, Sheffield, and Lincolnshire Railway Companies (Messrs. Francis Stevenson and Alexander Ross), and the contractors are Messrs. R. Neill & Sons, of Manchester.

RESTORATION OF PARISH CHURCH, HINDERWELL, YORKSHIRE.—St. Hilda's Parish Church, Hinderwell, has been restored and re-opened. The cost amounts to about 1,000*l.*, and the work has been of a comprehensive nature, comprising new roof, new floor, new windows, and new heating apparatus. The interior is also entirely reseated. The pulpit has been erected to the memory of the late Mr. John Corner, father of the present Rector. An apse has to be built at the east end, when the requisite funds are forthcoming. The architect is Mr. R. Lofthouse, Diocesan Surveyor, and the principal contractors are Mr. H. Harland, Whitby; Messrs. Punch Bros., Middlesbrough; Mr. Jefferson, Hinderwell; Messrs. Musgrave, Belfast; and Mr. J. Stephenson, Whitby.

BAPTIST CHAPEL, PENARTH.—The opening of the new Tabernacle Baptist Chapel, situate in Plassey-street, Penarth, took place recently. The cost of the whole building was 3,000*l.* The contractor was Mr. D. G. Price, of Penarth, the buildings being designed and carried out under the supervision of Messrs. Jones & Thornley, architects and surveyors, Cardiff.

NEW WING, THE ROTUNDA HOSPITAL, DUBLIN.—The new Thomas Plunkett Cairns' wing of the Rotunda Hospital, Dublin, has just been opened. Mr. Albert E. Murray, Dublin, was the architect for the extensions. The new wing is three stories in height, has a frontage towards Rutland-square of 100 ft. with two wings, each about 70 ft. deep. The material used in its construction is red brick, relieved by yellow terra-cotta around the entrance-door and windows. The ground floor is provided with waiting and consulting rooms, housekeepers' and sitting rooms, and dormitories for ward-maids. The upper stories are reached by hydraulic lift. On the first floor are situate two wards, measuring 65 ft. by 25 ft., and each furnished with sixteen beds, while branching off the connecting corridor are several smaller wards. Each ward has attached to it a sanitary annexe, fitted with bathrooms, &c. Space has also been found on this floor for a kitchen and two operating theatres. The upper story is devoted to nurses' dormitories, each of the pupil-nurses being provided with cubicles, while the staff-nurses have each been assigned a separate bedroom. Hot water is supplied to all parts of the building from a boiler in the basement, and a destructing-chamber has also been fitted up in the basement for the purpose of destroying hospital refuse. The sanitary fittings have been supplied by Messrs. Maguire, of Dublin, who also erected the gas-fittings. Mr. Kieran carried out the building contract.

NEW WORKHOUSE INFIRMARY, BURNLEY.—A new infirmary adjoining the workhouse at Rake Head, Burnley, was opened on the 21st inst. The building is constructed on the pavilion principle, and is in two wings, each two stories high, with an administrative block in the centre. The structure throughout is built of Yorkshire pierpoints with local stone ashlar dressings. The whole of the floors are fireproof, being formed of steel girders, filled in with concrete, and covered with two skins of boards. In the sick wards the top skin is of polished Austrian oak, the remainder being of Baltic redwood. The corridors on the ground floor are granite finished, except a small portion at the entrance, which is laid in mosaic. The total accommodation is for 185 beds. There are four wards, each capable of holding thirty-four beds, and four isolation wards for pulmonary cases (these are so arranged that they can be heated to a high temperature if required), as well as eight more isolation wards for other cases, together with lying-in wards and bedrooms for the official staff. The heating is on the hot-water low-pressure system, by steam passing through calorifiers. In addition to the above there are open fire-ranges in each room. In each of the large wards there are two of Shorland's double-fronted stoves. There are baths, lavatories, and water-closets on every floor, in both the sick-ward and the administrative block, with hot and cold water, and fire appliances on the landings on each floor, which are fitted up with valves and hosepipes, and iron escape-stairs to both pavilions and the central block. The drainage is fitted up with modern appliances, with disconnecting traps and automatic flushing chambers. The cost of the building will be 30,000*l.*, exclusive of furnishing and land, whilst the total estimated cost for land, buildings, and furnishing is 35,000*l.* The various contractors' works have been executed by the following:—Masons' and bricklayers' work, Messrs. A. & R. Parker; joiners' work, Messrs. R. Dean & Sons; concrete work, the Phœnix Fire Proof Company, Manchester; slaters' work, Mr. W. Stanworth, Burnley; hot-water, Messrs. James Blezard & Sons, Padiham; plumbing and gas-fitting, Mr. John Brooks, Burnley; plastering, Messrs. Robert Rawlinson & Son, Burnley; painting, Messrs. J. & J. Hey, Colne; water-closets, baths, and sinks, Mr. G. Jennings, London; lavatories, Messrs. Shanks & Co., Glasgow; mantelpieces, Messrs. Doulton & Co., London; channel-bends and disconnecting traps, Messrs. Broad & Co., London; automatic flushing chambers and valves, Mr. Robert Fields, London; steam-pipes, Mr. W. Cowell, Burnley; cooking appliances, Mr. T. Bradford, Manchester; ventilators, Mr. E. Hatton, Manchester, and Messrs. Boyle's, London; ornamental ironwork, Messrs. G. Smith & Co., Glasgow. Mr. Samuel Keighley, of Burnley, was the architect.

SANITARY AND ENGINEERING NEWS.

STREET IMPROVEMENTS, COWPEN.—Col. A. G. Durnford, R.E., held an inquiry on Tuesday, at the offices of the Cowpen Urban District Council, Blyth, Northumberland, relative to an application from that authority for sanction to borrow the sum of 3,383*l.* for works of private street improvement, the provision of public offices, and a town's refuse tip. Mr. R. Grieves, Surveyor to the Council, explained the plans, and accompanied the inspector on a visit to the sites of the proposed works. There was no opposition.

BRIXTON CABLE TRAMWAY.—The new extension of the Brixton cable tramway was on Saturday last inspected by Major Marindin on behalf of the Board of Trade. It is now nearly three years since the cable line from Kennington through Brixton to Streatham Hill was opened. From the first it was intended that its two and three-quarter miles of length should be prolonged southward for another mile and a half; but owing to the narrowness of the street only a single-line extension was contemplated. Arrangements were subsequently made for widening the road for three-quarters of a mile, and for this distance the tramway has now been made as a double line with an idea of extending it further in the future. The designing of the extension, as well as the supervision of the carrying of it out, were entrusted to Mr. James More, jun., engineer to the contractors, Messrs. Dick, Kerr, & Co., Limited.

BRIDGE ON THE GREAT EASTERN RAILWAY.—A work of considerable interest as illustrating what can now be done in the way of rapid bridge construction was carried out, says the *Times*, on the Great Eastern Railway at Ely on Sunday. The Cutter bridge which passed over the river Ouse at Ely was an old timber and cast-iron girder structure which was put up in 1845, but was not considered equal to the heavier rolling-stock of the present day. It had, therefore, been decided to substitute for it a bridge of cast-iron girders, and having, too, a single span across the river, on brick abutments, in place of the three spans and wooden piles of the old bridge. The problem that engineers and contractors set themselves to solve was how to put the one bridge in place of the other with the least possible interference with any of the ordinary trains, whether passenger or goods, the point in question being one of the busiest on the company's system. On Saturday the new bridge, complete in every respect, including the lines of the permanent way thereon, was to be seen standing alongside the main line in readiness for the work of Sunday. The ends of the main girders were supported on small trolleys, and each of these worked on a rail placed on longitudinal timber on the top of the temporary staging, so as to allow of the new structure being eventually drawn into position. At ten minutes past one on Sunday morning operations began. In ten minutes the first rail on the top line had been removed, and in another ten minutes the first girder was being carried off by two locomotive steam cranes working on the down line. The scene was illuminated by powerful Wells' light, and girder after girder was carried off, steadily increasing the gap. The wooden piles which had supported the girders were sawn through above water-level, and the "crowns" carried off by the cranes, the lower portions being left to be drawn on a future occasion. At last the up line and the greater portion of each of the particular piles on which it had rested had been cleared right away, leaving only the down line and its supports standing. Then came the most interesting feature of the morning's work—the "traversing" or drawing sideways of the new bridge so that it would occupy (until the whole of the old bridge had been removed) the place where the up line had formerly stood. This traversing was done by means of two ropes worked by winches, and although the massive structure weighed, including rails and timber, something like 120 tons, it was drawn into its half-way position—a distance of 15 ft.—within a minute or two over half an hour. By this time it was nearly six o'clock in the morning, and the actual time taken by the operations referred to was only about three and a half hours. Work was resumed at noon, and the workers, about forty in number, proceeded to clear away the down line. The new bridge was then brought into position, for the remainder of the distance, in half an hour; the connexions between the rails and with the abutments were completed, and at eight o'clock in the evening the express from Norwich to London passed safely over the new bridge. The substitution of the new bridge for the old one had taken about eleven hours' actual working, and had involved scarcely four hours' interruption of traffic. The work was carried out under the supervision of Mr. Wilson, Engineer, and Mr. Morgan, assistant engineer, of the Great Eastern Railway Company, while Mr. Anderson, the managing director of Messrs. Head, Wrightson & Co., and Mr. Young, London manager, represented that firm, who were the contractors.

FOREIGN AND COLONIAL.

FRANCE.—The sculpture group of Washington and Lafayette, by M. Bartholdi, presented to the City of Paris by M. Pilitzer of the New York *World*, is to be inaugurated to-morrow (Sunday) on the Place des Etats-Unis.——By a decree of the President the post of "Directeur des Bâtiments Civils et des Palais Nationaux" has been suppressed, and the present holder of the office, M. Jules Comte, has been placed on the retired list.——M. Lachenal, the ceramic artist, has opened at the Georges Petit Gallery the sixth exhibition of his works, many of which have been executed in collaboration with M. Rodin and M. de St. Marceau.——The City Council of Paris has under consideration a scheme for bringing water to Paris from Lake Leman.——It is proposed by the Government to demolish the Hôtel de l'Imprimerie, a portion of which is in a ruinous state. The operation will cost about a million francs.——A large municipal theatre is being built at Saint Ouen, opposite the Hôtel de Ville.——In the foundations of a house at Annecy a cavity has been found covered with a large stone and filled with fragments of statues, probably portions of the ancient convent of St. Sepulchre which once occupied the site. Various heads have been collected which are well preserved, and a figure of Christ, larger than life, has been nearly put together complete.——The railway station at Montbéliard is to be demolished, to make way for a new and much larger one with a fine building in front of it.——A vase presented by the Czar to the City of Paris has been placed in the Salle des Cariatides of the Hôtel de Ville. The total height, including the pedestal, is three mètres; the vase is in green jasper and is decorated with the arms of Russia and of the City of Paris blended. The two bronze handles are surmounted by heads symbolising Russia and the French Republic. The pedestal, of red jasper, is decorated with the arms of Cronstadt and of Toulon.——The jury at the competition opened for the rebuilding of the Palace of Fervaques at St. Quentin has awarded the first premium to M. Malgras, architect, of Château-Thierry; the second to M. Bourbier, of Laon; the third to M. J. Chénier, of St. Quentin; and the fourth to M. Fortier, of Cambrai.——The death is announced of M. Constantin, painter, and a pupil of Couture, who was a constant exhibitor at the Salon.——The death is also announced, at Havre, of M. Theodore Huchon, architect, aged seventy-three. M. Huchon was a member of the Société Centrale, and architect of the Hotel of Queen Christina of Spain, in the Avenue des Champs Elysées, at present in possession of the Duchesse d'Uzès.

GERMANY.—The central council of the amalgamated societies for the development of the inland waterways, have held a business meeting at the Berlin Houses of Parliament, in which various extensive schemes were discussed. One of the most important being the proposed inland harbour at Breslau which is to cost about 160,000*l.*, and which will be invaluable for the East Prussian trade. The frontage of the embankment will allow for the unloading of sixty boats at a time.——The Rhine-Elbe canal scheme is making rapid progress. The cost of this canal will be about eleven millions sterling, of which 63 per cent. is to be paid from the national exchequer and the remainder by the provinces interested, in the form of a loan.——The Berlin University is to have a new Polytechnic Institution, for the surgical division. The old Polytechnic treated twenty-thousand patients annually.——The subjects for the Schinkel Competition of 1896 have now been published; for architects the subject will be "A County Council Building," and for engineers, "A Metropolitan Railway."——The new Bismarck monument at Rudelsburg, shows the figure of the ex-Chancellor as a young student of eighteen, the portrait being taken from a drawing by Kessel, dated 1832. On the pediment there is a bas-relief showing Bismarck's head at the age of seventy-five; Mr. P. Retzschner is the sculptor.——The alteration and renovation of the exhibition building at the Lehrter station has been commenced, under the superintendence of Professor Ende.——The river harbour on the Spree, in the "Urban" suburb of Berlin, was opened on the 27th inst.——The "Salon," which has been closed at Berlin, has made a profit of 5,000*l.* on the entrance fees and commissions for sale of pictures. About half of this generally goes to the artists' benevolent fund.

MISCELLANEOUS.

THE LATE MR. E. P. LOFTUS BROCK, F.S.A.—We understand that the professional practice of this well-known church-architect and antiquary is being taken over, in accordance with his own particular desire, by Mr. Geo. Patrick, A.R.I.B.A., his old friend and successor in the Hon. Secretaryship of the British Archæological Association.

PARTNERSHIP.—Mr. Graeme-Watt, architect, of Belfast, has taken into partnership Mr. F. H. Tulloch, formerly of London, and whose name is well-known to our readers. They will practise conjointly under the style of "Graeme-Watt & Tulloch."

OPAQUE BLINDS, &C., PUTNEY SCHOOL OF ART.—This school has recently been fitted with Messrs. Guynan's special opaque blinds both in lecture-hall and class-rooms, as also with an elaborate system of curtains in the lecture-room; with the double object of changing the direction of the light at pleasure, and of providing that when a lesson cannot be finished under daylight conditions, the room can be darkened and the lesson begun and finished by artificial light.

REREDOS, HOME OF THE COMMUNITY OF THE EPIPHANY, TRURO.—The sisters at the Home of the Community of the Epiphany at Truro have received some additions to their chapel. A new reredos, in carved oak, has been erected. It is of late Gothic character. In the large central panel under a canopy of traceried work, is a full-length figure of our Lord. A new shrine has also been added. It is of carved oak, the cross itself being ebony, and the figure of the crucified Christ hung upon it of pear tree. The work has been carried out by Messrs. Harry Hems & Sons, of Exeter.

PLUMBERS' WORK AND SANITARY ENGINEERING.—The ninth lecture of the course of sanitary lectures was given on the 23rd inst. at the Plymouth Technical School by Mr. Thomas N.

Andrew, M.I.E.E., on "Plumbers' Work and Sanitary Engineering." The subjects treated on were traps, joints, sinks, lavatories, and water-closets. The lecturer said that men sending out such advertisements as builder, plumber, painter, glazier, carpenter, range and stove maker, hot-water engineer, writing, graining, marbling, water-closets fixed on the newest principles, &c., should be regarded with suspicion and their signs treated as danger-boards. The lecturer, in viewing houses fit for occupation, stated that no house was fit for human occupation if it contained a bad water-closet, a non-cleansing sink, a badly-ventilaied soil- or waste-pipe, a sewer ventilating into a house-drain, a drain ventilating into the house through a surface-trap, bell-trap, or any other kind of defective trap or piping. In discussing traps, various kinds of traps were shown, and their merits and demerits pointed out, and the lecturer said that the only traps fit for use in or near our houses should be made of material smooth, non-corrosive, free from angles and corners, and places where dirt could accumulate and generate noxious gases. Every trap should have a free waterway through it so that the discharge might pass through without breaking its form, and with a water seal of from 1½ in. to 2 in. The traps used on fittings should be of the minimum size required to do the work, and the trap fixed so as the discharge may fall with a vertical velocity on the standing water in the trap, and thus cleanse it thoroughly at each flush.

PUBLIC PARK, DORCHESTER.—The land on the Cornwall Estate, Dorchester, is being laid out for the purpose of a public park and gardens. The work has been entrusted to Mr. Goldring, of Kew. The park will be enclosed with a plain wrought-iron unclimbable fence with spear heads, and the order for this work has been entrusted to Messrs. Lott & Walne, of the Dorchester Foundry. A large number of local men have already been employed in laying out the land, under the superintendence of the Borough Surveyor, Mr. G. J. Hunt.

SANITARY BUILDING CONSTRUCTION. — The eighth lecture of the sanitary science series was delivered by Mr. J. S. Warren at Plymouth Technical School on the 20th inst., the subject being "Sanitary Building Construction." The lecturer, in dealing with foundations, showed the necessity for the exclusion of dampness from the site, and explained the circumstances under which a pervious soil may become water-logged, and how by means of drainage a dry foundation may be secured. The impurities of ground air were touched upon. Diagrams showing means of preventing absorption of dampness from the surface soil by brick or stone, dry areas, damp-proof courses were exhibited, and it was claimed that even in made ground, by first draining and by laying upon the soil between the walls the 6-in. depth of concrete demanded by the London Building Act, together with the construction of ventilated and damp-proofed areas a dry basemeut—as nearly as possible—is produced, and all ground air excluded. Hollow walls and walls with vertical damp courses were shown as means of equalising temperature, and of rendering the house dry.

ART AND INDUSTRIAL EXHIBITION AT WHITEHAVEN.—Under the auspices of the Whitehaven Conservative Association, an Art and Industrial Exhibition is being held at the Granary-yard, Whitehaven. The fittings have been carried out by Messrs. Womersley, of Leeds. The electric-light has also been utilised. There is a large display of art-treasures, and the exhibition is to remain open for a month.

A BURNS STATUE FOR IRVINE, AYRSHIRE.—A statue of Burns is to be erected at Irvine. The commission for the statue was entrusted to Mr. Pittendrigh Macgillivray, A.R.S.A., who has just finished the figure in clay. Burns is represented standing firmly on the left foot. The right foot is drawn up, and rests on a higher plane. The statue is to be cast in bronze. On the pedestal there are to be bronze panels with scenes from the poet's works.

WATER SUPPLY IN SEVERE FROST. — Some further local bodies in South London have intimated to the Lambeth Water Company their readiness, in the event of a severe frost, to assist the directors in their efforts to deliver water at the houses of the inhabitants by letting the company have the use of the water-vans belonging to the respective boards. To all the local bodies that have been applied to by the company the request for assistance in the event of a great frost has appeared to be a reasonable one, which, in the interest of the ratepayers, should be acceded to. In addition to the local bodies already mentioned as willing to assist the water company may now be added the Newington Vestry and the St. Saviour's Board of Works, and in each case the charge to the company will be 21s. per day, to include horse and van and two men.—*Daily News.*

APPOINTMENT OF ARCHITECT, LANCASHIRE CONSTABULARY COMMITTEE.—The Standing Joint Committee of the County Constabulary of Lancashire have appointed Mr. Littler, architect, Manchester, son of Mr. Hy. Littler, architect, of that city, to fill the newly-created permanent appointment of architect to the Committee. Originally there were between eighty and ninety applications from practitioners of standing in all parts of England, and in the final three were Mr. Denison, of Wakefield, Chief Assistant in the offices of the County Surveyor for the West Riding, and Mr. E. H. Dawson, A.R.I.B.A., Assoc.San.Inst. of Lancaster. The salary of the office is fixed at 600*l.* per annum, with staff and offices found, but a condition of appointment is that there will be no retiring allowance or pension. Mr. Littler will take up his duties on January 1, 1896.

THE DESIGNING OF PUBLIC BUILDINGS IN AMERICA.—"A large number of defects are said to have been discovered in the cast-iron columns in the new City Hall, at St. Louis, in the shape of blow-holes of alarming size, which, as it appears, were concealed with putty and cement when the columns were delivered. The experts who have been consulted in regard to the trouble think that the building will not be safe for use until many of the columns have been replaced by new ones. It is certainly better to discover the flaws now, than to have them reveal themselves by a sudden break-down some years hence; bnt one cannot help thinking that it would have been better still to have detected them before the columns were put Into the building; or, best of all, to have contracted for the cast-iron work with some one who would never have furnished such fraudulent and dangerous material. It is curious that, in this coountry, the most foolish planning, miserable design, ridiculous construction, and wretched material and workmanship are usually found in public buildings. Even where the design and plan are good, the construction is very apt to be confided to some one with political influence, or to some member or friend of the little coterie which, in all our great cities, usually carries on the government; and the favoured individual, who is likely to receive the contract because he needs the money, does his best to make all the profit that he can out of it. It will be remembered that, a few years ago, an important public building fell, by the collapse of the iron columns; and it was found, on inquiry, that the contract for them had been given to a friend of the ruling group, who carried on a blacksmith's shop somewhere in the country; and that this individual, not being possessed of means for casting a whole column at once, had set up his mould, and poured in the melted iron by small doses, until the mould was full. As each ladle-full of iron cooled before the next was melted, the columns thus consisted of irregular rings, kept together in the most insecure manner; and under the influence of a strain, they soon parted company altogether. Whether the St. Louis defects were due to the selection, by favouritism, of an incompetent contractor for the ironwork, we cannot, of course, say; but it will do no harm to have the matter fully investigated."—*American Architect.*

THE PLANET JUPITER. — The publishers of *Knowledge* announce that the first coloured astronomical plate ever issued in the magazine will appear in the January number. This will take the form of a coloured drawing of Jupiter, which has been executed by Mr. N. E. Green, and reproduced by a special process.

THE DANGERS OF HOUSE DEMOLITION.—Dr. G. Danford Thomas held an inquest on the 15th inst. at St. Pancras Coroner's Court on the body of Arthur Ellis, aged 45, a house-demolisher, who was killed on the previous Wednesday afternoon by the fall of the party-wall of a house in Leighton-road, Kentish Town, which was being demolished for the Midland Railway Kentish Town Station extension. The house had, it seems, been bought for the sake of its materials by James Ades, and had been demolished down to the first-floor, a party-wall, 25 ft. high, remaining. Ades and deceased, both experienced "housebreakers," were working on the job, when suddenly and quite unexpectedly the wall fell in. Ades escaped with slight injury, but the deceased was buried beneath a mass of *débris*. Mr. Albert N. Hawtrey, Assistant Surveyor to the St. Pancras Vestry, was, with his men, engaged in the execution of some sewer-work close by, and he at once set his workmen to clear away the *débris*. An hour elapsed, however, before Ellis was reached. He was quite dead.—Mr. Hawtrey said that the house was an old one, and the best bricks were not as a rule put into party walls. His belief was that this party wall had been shaken and loosened by the vibrations caused by passing trains on the Midland Railway, hard by, hence the collapse.—Answering the coroner, the witness added that there were no regulations whatever with regard to the demolition or the mode of demolition of buildings, with a view to securing the safety of the workmen employed, and that of the public.—The coroner said he had often noticed "housebreakers," as they were called, standing on the top of high walls and demolishing them with their picks, and he wondered that accidents were not more frequent. Surely there should be some kind of official supervision over this work.—Mr. Hawtrey said that was a matter for the consideration of the London County Council.—The jury in the result returned a verdict of "Accidental death."

INFRINGEMENT OF THE BARRY BY-LAWS.—At Barry Police-court recently, Henry Tozer, convicted, at the instance of the Barry Urban District Council, with an infringement of by-laws by allowing two houses at Cadoxton to be inhabited without a certificate of completion from the Surveyor, was fined 40s. and costs, with a continuing penalty of 40s. per day unless the offence was remedied forthwith.—James Sydenham, a builder, for erecting a building in Jewel-street, Barry Docks, without presenting plans and giving the necessary notice, was fined 10s. and costs, with a continuing penalty of 40s. per day unless the offence was remedied forthwith.

FONT, CHURCH FOR THE DEAF AND DUMB, OXFORD-STREET.—At the Church for the Deaf and Dumb in Oxford-street a font has been recently dedicated to the memory of Mr. H. G. G. Ayshford. The font was subscribed for by members of the Society and other friends, and was designed by Sir Arthur Blomfield.

CLOCK AND CHIMES, ST. MICHAEL'S CHURCH, COVENTRY.—For about six weeks workmen have been engaged replacing the clock and chiming apparatus in St. Michael's tower after they had been laid aside ten years. The contract was given to Messrs. Potts, of Leeds.

SALVATION ARMY SHELTERS.—At Southwark Police-court on Thursday last week, before Mr. Slade, the hearing was resumed, for the sixth time, of the case of Dr. Waldo, Medical Officer of Health of the parish of St. George the Martyr, Southwark, against Thomas J. Robinson, a "captain" in the Salvation Army, for overcrowding the Blackfriars-road shelter on July 8, and other dates, and thereby causing a nuisance, injurious and dangerous to health. The prosecution contended that the superficial and cubic capacity of the shelter was only sufficient to accommodate 400 persons; the defence was that there was sufficient accommodation for 800 persons; and it was shown by evidence that on two or three nights the actual number of inmates rose as high as 900 and 1,000 persons. It was argued on behalf of the defendant that these admitted cases of overcrowding were exceptional, and that the limit of 800 was not usually exceeded. The prosecution did not press for penalties, but asked for an order to prohibit a recurrence of the nuisance.—Mr. Dunford, architect, of Queen Victoria-street, stated that this shelter was sufficient to accommodate 900 persons without injury to their health. Doctors were very strong on floor-space in hospitals, but it was not so important as frequent ventilation in a shelter.—Dr. W. A. Clarke, late of the Kensington Infirmary, said he was at the opening of the Blackfriars' shelter, and had since visited it several times. He saw nothing there that was injurious to health, and thought the building would fairly accommodate more than 800 persons.—Cross-examined: A floor-space of 12½ ft. and a cubic space of 190 ft. was sufficient in that place, but would not be sufficient everywhere. If the London County Council fixed a limit of 36 square feet and 300 cubic feet in common lodging-houses no doubt there was good reason for it, but in this shelter they could do with less, because of the great attention which was paid to cleanliness and ventilation. He thought 1,000 people might be there without danger to their health.—Rebutting evidence for the prosecution was then given by Drs. Symons, Loane, Jackson, Herron, and Bryett.—Mr. Slade, in giving judgment, said: On the question of overcrowding we have had before us several medical and scientific gentlemen of great repute, on both sides; but it appears to me that they differ so widely in their views as to the air and floor-space required for the healthy occupation of this shelter, that the wisest plan would be not to accept the evidence of either side in its entirety. In my opinion, when we consider the class of persons who occupy this shelter—we have heard that anybody is admitted there who can pay the sum of 1d., and no questions are asked as to his character or as to his cleanliness—we must be very careful that this place does not become, as some of the medical officers have said, a centre of infection, and, as it were, a nuisance to the whole neighbourhood. Considering that, in my opinion, the lowest of these numbers, 743 would overcrowd the premises so as to be injurious to health, which is now asserted for the purposes of this summons, it would be sufficient for me to leave the matter there, and to make the order which is prayed for; but as this case has been carried to a great length, and is of very great importance, I think it would be only fair to the defendants, and would save time and expense, if I say that I personally should not be prepared to convict the shelter of overcrowding if the number of 550 were not exceeded. There will be an order to prohibit the recurrence of the nuisance with simply 4s. costs.

DECORATION OF ST. ROBERT'S CATHOLIC CHURCH, MORPETH.—The Roman Catholic Church of Morpeth has just been reopened. Messrs. Atkinson Brothers, artists in stained-glass and church decorators, Newcastle, have designed and executed the decorative work in its interior.

ARTS AND CRAFTS EXHIBITION AT DUBLIN.—This exhibition, promoted by the Arts and Crafts Society of Ireland, was opened on the 26th inst. in the Royal University Buildings, Earl's Court-terrace, Dublin, by the Lord-lieutenant of Ireland. The society, which is now in its first year of existence, was established with the objects of improving the craftsmen of the country, and attempting to raise the artistic level of their work. The exhibition consists of three sections, the first of which is devoted to contemporary Irish work in original design and handicraft; the second, named the "retrospective

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Laying-out Endcliffe Hall Estate	Endcliffe Estates Co. Lim.	100, 50, and 25 Guineas	Dec. 31
*Technical School	Borough of Lowestoft	.....	Jan. 30'96
*New Detached Infirmary	Shardlow Union	20*l.* and 10*l.*	Jan. 31

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Weaving Shed and Warehouse, Hebden Bridge, Yorks	.....	W. H. Cockroft	Dec. 3
Schools, Dinas, Glam.	Ystradyfodwg Sch. Bd.	J. Rees	do.
School, &c.	Corwen (Wales) Sch. Board	J. D. Denny	do.
*Construction of Settling Tanks, &c.	Sutton-in-Ashfield, U.D.C.	.....	do.
*Kerbing, Tar Paving, &c.	Lewisham Bd. of Wks.	*Official*	do.
Schools	Sutton St. Edmunds (Lincs) School Board	R. H. H. Hand	Dec. 4
Schools, Ampfield, near Romsey, Hants	.....	Colson & Son	do.
Roads and Footpaths, Rosehill	Tynemouth R.D.C.	*Official*	do.
Street Works, Alexnadra-road, &c.	Uckfield U.D.C.	do.	do.
Guernsey Granite Spalls	Strood (Kent) Union	do.	Dec. 5
Paving Works (7 sections)	Glasgow Corporation	do.	do.
Roadmaking, Coleridge-street	Hove U.D.C.	do.	do.
Private Road Works, Silverdale-road	Burgess Hill (Sussex) U.D.C.	do.	do.
Widening Northamridge-road	Northam(Devon)U.D.C	C. F. Saunders	do.
Church, Aughebrack, Ireland	.....	R. J. Toye	do.
Shops, Albion-court, Bradford, Yorks	.....	Milnes & Francis	do.
Sewering, &c. Varley-street, Stanningley	Pudsey U.D.C.	R. W. Caes	Dec. 6
*Erection of Offices, Stabling, &c.	Midland Railway	.....	do.
Farm Buildings, Cornworthy, Devon	.....	Bourne & Son	Dec. 7
Surveyor's Materials	Worcester Corp.	T. Caink	do.
Wards at Workhouse	Rugby Union	T. W. Willard	do.
Cast-iron Pipes, &c.	Leicester Corp.	A. Colson	do.
*Supply of New and Purchase of Old Stores	G.N Railway Co.	.....	do.
Additions, &c. to Workhouse	East Preston (Sussex) Union	H. Howard	Dec. 9
*Renewing Leaded Lights	Amersham Union	*Official*	do.
*Wood Paving	Comrs. of Sewers	do.	Dec. 10
Tidal Storage Sewer, Aberdovey, Wales	Towyn U.D.C.	M. W. Davies	Dec. 11
*Construction of New Drains	Northleach Union	Prothero & Phillott	do.
*Supply of Steam Washing Machine	Woolwich Union	*Official*	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered
Three Shops and Houses, Reddy Carr-road, Marsden, Yorks	.....	J. Kirk & Sons	Dec. 12
*Iron Staircases	Chorlton Union	J. B. Broadbent	do.
*Terra Cotta	do.	do.	do.
*Stores and Materials	Nottingham Corp.	A. Brown	do.
*Construction of Underground Urinal	Borough of Brighton	F. J. C. May	Dec. 13
Drainage (three contracts)	Felixstowe and Walton U.D.C.	G. S. Horton	do.
House, Stabling, &c. Patricroft	Eccles Corporation	A. C. Turley	do.
*Erection of Pumping Station	Mansfield Corporation Water Works	G. & F. Hodson	do.
School, Bolton Brow	Sowerby Bridge School Board	Horsfall & Son	Dec. 14
Chapel and School, Manchester-road, Bury, Lancs.	.....	H. Whitaker	do.
Cast-iron Pipes and Branches	Stourbridge Main Drainage Board	M. Fidian	Dec. 16
Waterworks, Hazon, Northumberland	Amble U.D.C.	M. T. Wilson	do.
Lodging House, Darwen, Lancs.	.....	Woods & Thackeray	do.
*Granite Kerb York Paving, &c.	Paddington Vestry	*Official*	do.
*Broken Granite	do.	do.	do.
Schools, Crow-lane, near Huddersfield	Golcar School Board	J. Berry	Dec. 17
*Blocks of Dwellings, Bethnal Green	London County Council	*Official*	do.
*Making Patent Tiles for Fireproof Floors	A. D. Dawnay, Esq.	.....	Dec. 19
*Iron and Stoneware Pipe Sewers	Stevenage U.D.C.	Urban Smith	Dec. 28
County Buildings	Durham C.C.	Barnes & Coates	Jan. 15'96
Cottage Homes, Schools, &c. Styal, Cheshire	Chorlton Union	J. B. Broadbent	Jan. 23
*Cottages, Homes, Workshops, Hospitals, &c.	do.	do.	do.
Mortuary, &c. at Workhouse	Droxford (Hants) Union	*Official*	No date
Kerbing	Droitwich Corporation	B. Godfrey	do.
Fifteen Cottages, Morris-street, Peter-borough	F. Smith	J. G. Stallebrass	do.
Offices, Stables, &c. Calder Vale, Burnley	Greenhalgh's Dyeing, &c. Works	C. Riley	do.
Additions to School, Old Farnley	Leeds School Board	W. S. Braithwaite	do.
Two Houses, Major-street, Thornes, Yorks.	.....	H. Long	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Clerk of Works	Boro' of Darlington	3*l.* 3*s.* per week	Dec. 7
*Instructor in Woodwork	School Bd. for London	100*l.* each	Dec. 12

Those marked with an asterisk (*) are advertised in this Number. *Competitions, pp.* iv. *&* xviii. *Contracts, pp.* iv., vi., *&* viii. *Public Appointments, pp.* xvi. *&* xviii.

section," contains a collection of Irish antiquities; and the third is a loan collection of contemporary English work, sent by the Arts and Crafts Exhibition Society, London.

LEGAL.

CASES UNDER THE NEW BUILDING ACT.

AT the Lambeth Police Court, on the 26th inst., John Anley, a builder, of Dalston-lane, was summoned by Mr. Ellis Marsland, District Surveyor, for failing to comply with a notice served upon him under the terms of the new Building Act of last year.

Mr. Williams appeared in support of the summons, and Mr. Washington defended.

The defendant has been building a beer-house, known as the "Boyton Arms," Boyton-road, Camberwell, and the case for the complainant was that the defendant had committed an irregularity in not making the passages, staircase, and means of approach to that portion of the premises used as a dwelling-house of fire-resisting materials. It appeared that the staircase had been made of common wood.

For the defence it was said that the public portion of the premises was separated from that set apart for domestic purposes by a fire-resisting wall, fitted with a fire-proof door, and Mr. Washington contended that as the staircase was contained within the dwelling-house, the Act did not require that it should be constructed of fire-proof materials. After considerable argument, Mr. Hopkins dismissed the summons, subject to the defendant undertaking to put a fire-proof door at the bottom of the cellar-steps.

Messrs. Perry & Co. were summoned under the new Building Act, at the West London Police-court recently, for having laid out a new street at Blythe-road, Hammersmith, without the sauction of the London County Council.

For the defendants it was contended that the place in question was not a public street in any sense of the term. The summons was dismissed, with seven guineas costs.

LONDON BUILDING ACT, 1894:

WOODEN STRUCTURES, SECTION 84.

AT Southwark Police Court, on the 26th inst., Mr. Fenwick gave his decision upon an adjourned summons taken out by Mr. Bernard Dicksee, District Surveyor for East Newington, &c., against Mr. W. Malham, of 140, Rockingham-street, S.E., for an order to enforce a notice of irregularity served by the District Surveyor in respect of a wooden structure erected between Nos. 56 and 57, Great Dover-street. The irregularity complained of by the District Surveyor, who conducted his own case, was the erection, without having first obtained for that purpose a licence from the Council, of a wooden hoarding, to be used as a signboard, measuring about 20 ft. by about 12 ft. wide, fixed over the entrance gateway to a yard between two houses, and about 3 in. back from the face of the front walls of the houses, the lower edge being some 14 ft. or 15 ft. above the roadway. The hoading was constructed of 3-in. by 3-in. quartering, braced, and boarded over the whole surface with 1-in. boarding covered with canvas.

It was contended by the District Surveyor that this was a structure for which a licence of the Council was required by Section 84 (1): hoardings enclosing vacant lands, not more than 12 ft. high, and hoardings licensed by the Local Authority under 57 Geo. III. c. 29 sec. 75, were specially exempted by the section; the expression "structure," therefore, must be taken to include all hoardings not so exempted.

Mr. Washington, who appeared for the defendant, argued that the District Surveyor had no jurisdiction, and that the procedure was wrong, also that this was not a "structure" intended by the section, as a structure must enclose some space. He quoted several cases, including Wendon *v.* L.C.C., to show this; as far as he knew there was no case where a plain flat erection such as this had been held to be a structure.

Mr. Dicksee quoted Lavy and Upjohn *v.* L.C.C., recently decided in the Court of Appeal, where a screen-wall was held to be a structure in advance of the general line of frontage.

Mr. Fenwick held that the District Surveyor had jurisdiction, and that the hoarding was a structure for which the licence of the London County Council was necessary: he therefore decided to adjourn the summons for six weeks to enable the defendant to apply for a licence.

MEETINGS.

MONDAY, DECEMBER 2.

Royal Institute of British Architects.—Third General Meeting (Business) for (1) the Election of Candidates for Membership; (2) Mr. G. A. T. Middleton, "To draw attention to certain Anomalies existing in the Papers set at the Intermediate and Final Examinations as now conducted." 8 p.m.

Society of Engineers.—Mr. W. T. Sugg on "Ventilation and Warming." 7.30 p.m.

Society of Arts (Cantor Lectures).—Mr. W. Worby Beaumont, M. Inst. C.E., on "Mechanical Road Carriages." 8 p.m.

TUESDAY, DECEMBER 3.

Institution of Civil Engineers.—Papers to be read with a view to discussion:—(1) "The Influence of Carbon on Iron," by Mr. John Oliver Arnold; (2) "The Dilatation, Annealing, and Welding of Iron and Steel," by Mr. Thomas Wrightson. 8 p.m.

Carlisle Architectural, Engineering, and Surveying Society.—Mr. F. W. Moseley on "Specifications."

Glasgow Architectural Association.—Mr. A. M'Kee on "Acoustics." 8 p.m.

WEDNESDAY, DECEMBER 4.

Royal Archæological Institute.—(1) Mr. F. C. J. Spurrell on "Some Flint Implements Recently Excavated by Professor Petrie." (2) Mr. C. C. Carnana on "Some Megalithic Discoveries and Explorations in the Island of Malta in 1892-93." 4 p.m.

British Archæological Association.—Rev. J. Cave Browne, M.A., on "Purbeck and its Marble." 8 p.m.

Society of Arts.—Mrs. Anna Lea-Merrit and Professor W. Chandler Roberts Austen on "Mural Painting, with the aid of Metallic Oxides and Soluble Silicates." 8 p.m.

Builders' Foremen and Clerks' of Works Institution.—Ordinary Meeting of the Members. 8 p.m.

Architectural Association (Discussion Section).—Mr. W. Harold Oakley on "Architectural Drawing." 7 p.m.

THURSDAY, DECEMBER 5.

Society of Antiquaries.—8.30 p.m.

FRIDAY, DECEMBER 6.

Architectural Association.—Professor Herkomer, A.R.A., on "Scenic Art." 7.30 p.m.

Institution of Junior Engineers.—Paper on "Considerations with Respect to Water, Gas, and Electric Mains, &c., in Connexion with the Formation of Urban Roads and Footways," by Mr. J. Julian. 8 p.m.

SATURDAY, DECEMBER 7.

Sanitary Inspectors' Association (Carpenters' Hall, Throgmorton-avenue, E.C.).—Mr. J. M. Jones on "The Public Health Acts, with Suggestions for their Improvement so as to Secure their More Effective Operation and to Simplify Procedure." 6 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

22,633.—PAVING STONES: *J. Lebau.*—A paving-stone or block consisting of a box composed of metal, baked clay, or other suitable material, and filled with asphalte.

23,918.—FLOORS AND CEILINGS: *T. Potter.*—Relates to fireproof-floors and ceilings, with temporary supports for same. By means of Z-shaped hangers from the joists a temporary platform is made for the concrete to be laid upon. Hangers are also inserted in the soft concrete to

support metal lathing-bars to which the ceiling-laths may be attached. Burnt clay flange-shields are also used to protect the bottom flanges of the metal joists.

24,171.—WINDOWS: *W. Youlten.*—In the hanging and locking faces of metal or wooden casement-frames, revolving rods of a circular or corrugated section are inserted, which give the casement an easier motion and also exclude draught and wet.

24,663.—CHIMNEY TOPS: *L. Marsden.*—A cowl, which is made with flat sides and a double-curved top, is arranged to revolve easily without grease or other lubricant. At the top of the chimney a circular trough is formed, in which three or more glass balls are carried. The lower part of the cowl is circular and adapted to rotate on the balls aforementioned.

25,253.—WINDOWS: *W. Fowler.*—For fastening the cord unto the sash in sliding windows, a metal ferrule, having a hole in the side and closed at one end, is used. The cord is drawn through the hole and secured with a knot, then the ferrule is inserted in the sash flush with the surface.

15,517.—PAVING: *C. Jefferson.*—Deals with a process for the manufacture of paving material consisting of drying peat, impregnating it with a molten asphalte composition, consolidating the mixture by pressure, either *in situ* or detached blocks.

NEW APPLICATIONS FOR LETTERS PATENT.

NOVEMBER 11.—21,312, W. Dunne, Securing the ends of Hanging Cords or Chains to Sashes.—21,316, H. Rogers and H. Fearon, Apparatus for Heating and Ventilating Rooms, Buildings, &c.—21,321. T. Fraser, Ventilator and Chimney-Cowl.—21,322, S. Hey, Sliding Windows or Sashes, &c.—21,330, R. Roberts, Glazing the Roofs of Buildings.—21,356, E. Wonters, Decorative Panelling.

NOVEMBER 12.—21,398, J. Crane and J. Law, Sash-fasteners.—21,405, T. Paddon, Valve-traps for Sinks.—21,417, P. Beaumont, Sewer and Drain Inlet.—21,431, J. Brierley and S. Melling, Coupling Lead Pipes to Lead or other Metal Pipes or to Taps.—21,432, A. Meiklejohn, Door Stop or Check.

NOVEMBER 13.—21,505, H. and F. Stephenson, Water-closet Basins, &c.—21,536, S. James, Ventilation of Sewers and Drains.—21,537, J. Holroyd, Terra-cotta Blocks, &c., for Building Purposes.—21,587, E. Tichenor, Window-sash.—21,590, L. Hofheimer, Window-fastener.

NOVEMBER 14.—21,598, F. Clee, Clip for Repairing Burst Water-pipes.—21,599, A. Morrison, Combined Door-stop and Fastener.—21,617, T. Ray, Ventilating Drains or Sewers.—21,618, T. Ray, Cleansing Drains or Sewers.—21,628, T. Marshall, Window Sashes.—21,631, F. Julien, Bricks.—21, 641, J. Ely, Construction of Glazed or Glossy Surfaces for Walls, Ceilings, &c.—21,651, J. Hookham, Window Sill.—21,671, J. Wallace, Drums for Holding Mixtures used as Paints.

NOVEMBER 15.—21,703, H. Malbon, Flush Closet-pan Protector.—21,713, J. Nuttall, Opening, Closing, and Securing Windows, having special regard to the cleaning of the outside from the inside, and security against other dangers.—21,756, W. Waller, Tiles.—21,758, E. Capps, Roofing Tiles.

NOVEMBER 16.—21,767, J. Laird, Parquet Flooring.—21,796, J. Buckland, Perforated Plates for attaching to Window-frame Boxings to admit fresh air.—21,805, H. Fairbrother, Wedge for Windows, &c.—21,838, J. Wigglesworth, Stoves and Fireplaces.

PROVISIONAL SPECIFICATIONS ACCEPTED.

16,824, W. Chivers, Window-sash Adjuster.—19,175, B. Fox, Fasteners for Securing Windows, Doors, &c.—19,437, T. Smith, Planes.—19,560, G. Mackie, Door-closing Appliances.—19,561, S. Hill and G. Mackie, Door-checking Appliances.—19,597, W. Walter, Conduits for Sewers, &c.—19,933, A. Budden, Lock-knobs and Spindles.—20,367, G. Allen, Drying Floor for Bricks, &c.—20,632, W. Bancroft and G. Priestley, Machinery for Manufacturing Retorts, Pipes, Tiles, Bricks, &c.—20,852, A. Brown and H. Pruce, Ventilators.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

936, A. Platt, Ceiling Protector and Ventilator.—19,126, C. Guckuck, Bricks.—19,198, J. Long, Seats of Water-closets.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

NOVEMBER 12.—By *Waters & Rawlence* (at Salisbury) "Scotland Farm," Winterbourne Stoke, Wilts., 501 a. 0 r. 19 p., f., 1,670*l.*

NOVEMBER 14.—By [illegible]*mley & Son* (at Birmingham): Freehold house, Yardley, Worcester, corn mill and 2 a. 3 r. 17 p., 600*l.*; two enclosures of turf land, 7 a. 2 r. 8 p., f., 450*l.*; 12, Booth-st, Handsworth, Staffs., f., 880*l.*; 10, 12, and 14, Aston-rd., and 206, 208, and 210, Phillips-st., u.t. 43¾ yrs., g.r. 30*l.* 7s. 9d. (reduced by sub-ground rents to 6*l.* 5s. 4d.), r. 151*l.* 16s., 1,075*l.*; 41 and 43, Hall-rd., u.t. 54 yrs., g.r. 10*l.*, 410*l.*; "Glendalough" and "Lauriston," Anderton Pk.-rd., Moseley, Worcester, u.t. 96½ yrs., g.r. 11*l.*, r. 58*l.*, 580*l.*

NOVEMBER 16.—By *Bruton, Knowles, & Priday* (at Gloucester): The Docks, The Alexandra Warehouse, and mill and malthouse adjoining, Gloucester, u.t. 37 and 56 yrs., g.r. 43*l.* 10s. and 45*l.*, 5,300*l.*

NOVEMBER 18.—By *Weatherall & Green:* 7, New-sq., Lincoln's Inn, two sets of chambers, f., r. 160*l.*, subject to a rent charge of 3*l.* 10s., 1,350*l.*—By *Beam, Burnett, & Eldridge* (at Ramsgate): 42, Thornton-rd., Ramsgate, Kent, f., 320*l.*; 1 to 5, Clarence Cottages, f., r. 57*l.* 10s., 350*l.*

NOVEMBER 19.—By *Hards & Bradly:* 169, Shardeloes-rd., New Cross, u.t. 69 yrs., g.r. 5*l.*, r. 28*l.*, 220*l.*—By *J. Davies:* 5, Ashmount-rd., Tottenham, f., e.r. 34*l.*, 365*l.*; 21, Albert-rd., Walthamstow, f., r. 24*l.*, 290*l.*; 1, Crown Villa, Twickenham, u.t. 85 yrs., g.r. 8*l.*, e.r. 40*l.*, 250*l.*; 134, Belvedere-rd., Lambeth, and 24, Tennison-st., u.t. 28 yrs., g.r. 10*l.*, r. 65*l.*, 505*l.*; 87, Brixton-rd., Brixton, u.t. 54 yrs., g.r. 9*l.*, r. 55*l.*, 100*l.*; 64 and 66, King's-rd., Chelsea, and 61 and 63, Symour-st., u.t. 3 yrs., g.r. 47*l.*, r. 285*l.*, 470*l.*; 24 to 32 even, Cale-st., u.t. 8½ yrs., g.r. 25*l.*, r. 159*l.*, 335*l.*

NOVEMBER 20.—By *Harold Griffin:* F.g.r. 31*l.*, Eldon-rd.' Walthamstow, reversion in 85 yrs., 600*l.*; f.g.r. 6*l.* 10s. 6d., Erskine-rd., reversion in 85 yrs., 130*l.*; 1 and 3, Erskine-rd.. f., r. 40*l.*, 495*l.*; f.g.r. 20*l.*, Heyworth-rd., Stratford, reversion in 84 yrs., 400*l.*; f.g.r. 31*l.* 10s., Pellant-rd., Fulham, reversion in 84 yrs., 750*l.*—By *Hobson, Richards, & Co.:* 43, Poplar Walk-rd., Brixton, u.t. 70½ yrs., g.r. 3*l.* 10s., r. 28*l.*, 250*l.*; "Rosemonnt," Lewisham-pk-cres., Lewisham, u.t. 76 yrs., g.r. nil., r. 60*l.*, 780*l.*—By *Foster & Cranfield:* 43 to 49 (odd), Burnthwaite-rd., Fulham, u.t. 84 yrs., g.r. 21*l.*, 940*l.*; 229, Balls Pond-rd., Islington, f., r. 45*l.*, 470*l.*—By *Maple & Co.:* 47 to 50, Kinross-st., Bermondsey, f., r. 92*l.* 6s., 765*l.*; 44, Marine-st., u.t. 32½ yrs., g.r. 2*l.* 10s., 130*l.*; 24 and 28, Salisbury-pl., f., r. 41*l.* 12s., 305*l.*

NOVEMBER 21.—By *Harman Bros.:* 22, Bridgewater-sq., City of London, and 23 and 24, Hart's-ct., f., r. 105*l.*, 1,050*l.*; 20, Bridgewater-sq., f., area 950 ft., 750*l.*; 11, Pakenham-st., Gray's Inn-rd., u.t. 46 yrs., g.r. 5*l.*, r. 34*l.*, 340*l.*—By *W. A. Blakemore:* 34, Medway-st., Westminster, and 4 and 6, Arneway-st., u.t. 84 yrs., g.r. 60*l.* until 1904, and 25*l.* thereafter, 450*l.*; l.g.r. 28*l.*, Page-st., u.t. 14 yrs., g.r. 4*l.*, 500*l.*; f.g.r. 30*l.*, Landsdowne-rd., Leytonstone, reversion in 97 yrs., 730*l.*—By *Newbon & Co.:* 69 and 70, Huntingdon-st., Barnsbury, u.t. 47 yrs., g.r. 6*l.*, r. 100*l.*, 930*l.*; 28, Belitha Villas, u.t. 35 yrs., g.r. 8*l.*, r. 46*l.*, 280*l.*; 92 and 94, Gaisford-st., Kentish Town, u.t. 53¾ yrs., g.r. 10s., r. 85*l.*, 1,025*l.*; 65 and 67, Peckwater-st., u.t. 53¾ yrs., g.r. 10*l.*, r. 71*l.* 8s., 415*l.*; 34, Albany-st., Regent's Park, and 3, Little Albany-st., u.t. 15¾ yrs., g.r. 14*l.* 7s. 6d., r. 88*l.* 5s., 370*l.*; 12, Mecklenburgh-sq., Bloomsbury, u.t. 13¾ yrs., g.r. 42*l.*, r. 92*l.*, 105*l.*; 10 and 11, Wilmington-pl., Clerkenwell, u.t. 20 yrs., g.r. 30*l.*, 110*l.*; 27 and 28, William-st., Islington, u.t. 50 yrs., g.r. 9*l.*, 420*l.*; "Prospect House" and "Prospect Works," Mare-st., Hackney, f., r. 225*l.*, 3,720*l.*; 53, Tytherton-rd., Holloway, u.t. 79 yrs., g.r. 5*l.* 3s., r. 50*l.*, 535*l.*; 82, Brecknock-rd., u.t. 53½ yrs., g.r. 6*l.*, e.r. 45*l.*, 395*l.*; 2, Albion Villas, Leyton, f., e.r. 38*l.*, 400*l.*

NOVEMBER 22.—By *R. Reid:* F.g.r. 120*l.*, Fenchurch-st., City of London, reversion in 82½ yrs., 3,710*l.*; 140, Fenchurch-st., f., r. 400*l.*, 8,050*l.*; 55 and 56, St. Paul's Churchyard, f., r. 650*l.*, 14,550*l.*; 193, Upper Thames-st., f., r. 600*l.*, 9,500*l.*; 72, Carlton Hill, St. John's Wood, f., r. 150*l.*, 2,520*l.*; 31, Upper-st., Islington, f., r. 120*l.*, 2,420*l.*; 113, High-st., Guildford, Surrey, f., r. 115*l.*, 2,870*l.*; "The Woodstock" Publichouse, Woodstock-st., Oxford-st., Corporation lease, u.t. 38¼ yrs., g.r. 2*l.* 10s., fine, 17*l.* 10s., 3,160*l.*; i.g.r. 44*l.* 7s., Albany-st., &c., Regent-st., u.t. 27 yrs., g.r. 15*l.* 15s., 430*l.*; i.g.r. 63*l.*, Lisson-gr., Marylebone, u.t. 6¾ yrs., g.r. 10*l.*, 300*l.*; i.g.r. of 28*l.* 10s., Devonshire-st., u.t. 19½ yrs., g.r. nil, 300*l.*; i.g.r. 40*l.*, Devonshire-st., u.t. 19½ yrs., g.r. 10*l.*, 300*l.*; i.g.r. 108*l.*, Aberdeen-pl., Maida Vale, u.t. 27½ yrs, g.r. 22*l.* 10s., 1,250*l.*

[Contractions used in these Lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent, r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	10/0/0 16/0/0
Sequoia, U.S. ft. cu		1/8 1/10
Ash, Canada load		3/0/0 4/5/0
Birch, do.		2/0/0 3/5/0
Elm, do.		3/15/0 5/0/0
Fir, Dantsic, &c.		2/0/0 3/10/0
Oak, do.		2/15/0 4/15/0
Canada		6/5/0 7/15/0
Pine, Canada red		0/0/0 0/0/0
Do. Yellow		2/10/0 4/15/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 6/10/0
Wainscot, Riga, &c., log		2/15/0 5/0/0
Odessa, crown		2/15/0 5/0/0
Deals, Finland		
2nd & 1st std 100		7/0/0 8/10/0
Do. 4th & 3rd		7/0/0 8/0/0
Do. Riga		7/0/0 8/0/0
St. Petersburg, 1st yellow		9/10/0 12/0/0
Do. 2nd yellow		7/10/0 9/0/0
Do. white		8/0/0 9/10/0
Swedish		7/0/0 15/10/0
White Sea		7/5/0 14/0/0
Canada, Pine 1st		21/0/0 24/0/0
Do. do. 2nd		16/0/0 17/0/0
Do. do. 3rd, &c.		8/0/0 10/0/0
Do. Spruce, 1st		9/0/0 10/10/0
Do. do. 3rd and 2nd		6/10/0 7/10/0
New Brunswick		6/0/0 7/0/0
Battens, all kinds		5/0/0 20/0/0
Flooring boards, sq., 1 in. prep. 1st		0/9/6 0/14/6
Do. 2nd		0/6/6 0/11/6
Other qualities—		0/4/6 0/7/6
Cedar, Cuba	ft.	/4 /4½
Honduras, &c.		/3½ /4½
Mahogany, Cuba		/3½ /6
St. Domingo, cargo av.		/3½ 2/0
Mexican do. do.		/5½ /4½
Tobasco do. do.		/4 /6
Honduras do.		/4 /6
Box, Turkey	ton	4/0/0 15/0/0
Rose, Rio		7/0/0 16/0/0
Bahia		6/0/0 15/0/0
Satin, St. Domingo		0/0/5 0/1/0

TIMBER (*continued*).		
Satin, Porto Rico	0/0/6	0/1/6
Walnut, Italian	0/0/3	0/0/7
METALS.		
Iron—Pig, in Scotland ton	2/6,11	0/0/0
Bar, Welsh, in London	5/12,6	5/15/0
Do. do. at works in Wales	5/2/6	5/5/0
Do. Staffordshire, in London	6/0/0	6/10/0
COPPER—British cake and ingot	46/0/0	46/10/0
Best selected	47/0/0	47,10/0
Sheets, strong	53/10/0	0/0/0
Chili bars	43/8/0	43/13/0
YELLOW M'TAL	0/0/4 9-16	0/0/4⅝
LEAD—Pig		
Spanish ton	11/12,6	0/0/0
English com. brands	11/15/0	11/17/6
Sheet, English, 6 lbs. per sq. ft. and upwards	12/10/0	12,12,6
Pipe	12/10/0	0/0/0
ZINC—English sheet ton	18/5 0	18/10/0
Vieille Montagne	18/15/0	0/0/0
TIN—Straits	64/0/0	64/10/0
Australian	64/15/0	65/5/0
English Ingots	68/0/0	68/5/0
Banca	65/0/0	66/5/0
Billiton	65/10/0	65/15/0
OILS.		
Linseed ton	19/10/0	20/0/0
Cocoanut, Cochin	25/5/0	0/0/0
Do. Ceylon	22/15/0	0/0/0
Palm, Lagos	22/10/0	0/0/0
Rapeseed, English pale	23/10/0	23/15/0
Do. brown	22/0/0	22/5/0
Cottonseed ref.	17/0/0	17/10/0
Oleine	19/10/0	20/10/0
Lubricating, U.S.	5/6/0	8/6/0
Do. black	4/9/0	6 6/0
TAR—Stockholm barrel	0/19/6	0/0/0
Archangel	0/15/0	0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender.]

ATHERSTONE.—For additions to Church of England school-buildings, Ansley, for Rev. C. Heaton and managers. Messrs. R. Scrivener & Sons, architects, Hanley, Staffordshire. Quantities by the architects:—

A. G. Fox	£569 15	J. Kelly	£481 0
T. Smith	540 0	C. F. Fox, Atherstone*	475 0
T. Smith	525 0		

* Accepted.

BRADFORD (Yorks.).—For the erection of a pair of semi-detached villa-residences, Esholt. Messrs. Empsall & Clarkson, architects, 55, Tyrrel-street, Bradford:—

Masonry.—F. Robinson, Thornton
Joinery.—J. Walker & Sons, Rawdon
Plumbing.—Geo. Swain, Bradford
Plastering.—A. Taylor, Eccleshill
Slating.—J. Smithies, Horton
Painting.—W. Sharp, Bradford
} £1,900

BUDLEIGH SALTERTON (Devon.).—For the execution of sewerage works, &c., for the Urban District Council. Mr. W. H. Beswick, C.E., Moss Side, Exmouth. Quantities by engineer:—

Hooper & Stooke	£209 15 7	— Hewett (informal)	£243 0 0
A. Hayman	204 8 3	* As sent in.	
J. Bench, Budleigh	*158 0 2	† After correction: accepted at this figure.	
Salterton	†178 1 8		

[Engineer's estimate, £200.]

CLACTON-ON-SEA.—For a complete installation of electric-light at the Convalescent Home, for the Weekly Board of the Middlesex Hospital. Mr. Adrian Collins, Assoc.M.Inst.C.E., Consulting Engineer, 61, Old Broad-street, E.C.:—

	Generating Plant.	Wiring.
Siemens. Bros., Ltd.	£3,153 0 0	£850 0 0
Mather & Platt	3,164 15 0	568 0 0
Johnson & Phillips	2,333 19 0	1,246 19 0
Crompton & Co., Ltd. *	2,370 17 0	697 0 0

* Accepted.

CRADLEY HEATH.—Accepted for the erection of new warehouses, &c., at Cradley Heath:—

	A.	B.
H. Dorse & Co., Cradley Heath, Staffs.	£5,375	£6,775

A.—Proprietor supplies bricks. B.—Bricks provided by contractors.

DARTFORD.—For the supply of 250 to 400 tons blue Guernsey granite spalls, for the Union Guardians:—

	Per Ton.
	s. d.
William Griffiths, Kirgsland-road, London	9 10

[Delivered free at the Workhouse.]

EAST RUNTON (Norfolk).—For the execution of drainage works, for the Erpingham District Council. Mr. R. M. Parkinson, engineer, Queen-street, Peterborough:—

J. Collison	£2,504 5 12	C. T. Baker	£1,072 13 0
F. J. Hipperson	1,190 5 3	Bardell Bros., King's Lynn (accepted)	1,025 0 0
W. Wilson	1,164 0 0		
B. Cooke & Co.	1,105 0 0	David Porter	1,025 0 0
Thos. Adams	1,056 8 5	Solden Hipwell, Wisbech (withdrawn)	874 0 0
W. J. Botterill	1,185 0 0		

GRAVESEND (Kent).—For new malting-cellars, &c., Gravesend, Kent, for Russell's Gravesend Brewery. Ltd. Messrs. Arthur Kinder & Son, architects and engineers Suffolk House, Laurence Pountney Hill, Cannon-street, E.C. Quantities by Mr. A. H. Kinder, 23, Finsbury-pavement, E.C.:—

W. Tuffee	£6,366	G. E. Wallis & Sons	£5,667
Multon & Wallace	6,289	W. H. Archer, Gravesend*	5,595
H. Wall & Co.	5,781		

* Accepted subject to reductions.

GUILDFORD.—For alterations and additions to "Cromwell House," Guildford, for the Guildford Rural District Council. Mr. A. J. Sturges, architect and surveyor, High-street Chambers, Guildford:—

Tribe & Robinson	£793 12	R. Smith	£634 0
P. C. May	793 0	A. Strudwick	693 10
T. H. Kingerlee	759 0	Higlett & Hammond	669 0
G. H. Tucker	758 0	P. Peters & Son	650 0
A. Johnson	751 0	Stanley Ellis, Guildford*	646 0
Tompsett & Kingham	730 0	W. J. Chinchen	640 0

* Accepted.

HANLEY (Staffs.).—For the erection of stabling, &c., Shelton Brewery, for Messrs. Dix & Co. Messrs R. Scrivener & Sons, architects, Hanley. Quantities by the architects:—

Ball & Robinson	£489	T. Godwin	£447
A. Ward	488	J. Groom	425
G. Ellis	454	N. Bennett, Burslem*	395

* Accepted.

HULL.—For the alterations to the Empire Theatre, Grimston-street, Hull. Messrs. Smith, Brodrick, & Lowther, architects, Hull:—

C. Bettinson & Son	£2,700 0 0	Drury	£2,179 0 0
Tulley & Levitt	2,379 0 0	Exors. T. Southern	2,129 7 6
Harper	2,252 0 0	Houlton	2,030 0 0
Eckles	2,239 10 6	Hall	2,027 0 0
D. R. Robinson	2,225 0 0	Jackson & Sons, Witham, Hull*	1,950 0 0
Goates	2,193 15 0		

* Accepted.

KINGSTON-ON-THAMES.—For new tower and copper-house, Kingston-on-Thames, for Hodgson's Kingston Brewery Co., Ltd. Messrs. Arthur Kinder & Son, architects and engineers, Suffolk House, Lawrence Pountney Hill, Cannon-street, E.C.:—

W. Downs	£5,872	Oldridge & Sons	£4,779
Falkner & Sons	5,285	H. Wall & Co.	4,539
S. Parmenter	4,957	G. E. Wallis & Sons, Maidstone*	4,429
J. Wheatley & Sons	4,859		
W. Shepherd	4,835		

* Accepted.

LONDON.—For constructing scene dock, &c., at the Britannia Theatre, Hoxton, for Mrs. S. Lane. Mr. Heelis, architect, 26, Budge-row, Cannon-street:—

Anley	£773 12	Todd	£721 12
J. Weibking & Sons	751 12		

LONDON.—For alterations to the sub-fire brigade station at Fulham, for the London County Council:—

H. M. Patrick	£831 0	Hatfield & Son	£882 10
C. F. Kearley	807 0	I. Lapthorne & Co.	856 0
Scharien & Co.	803 0	Elkington & Co.	778 0
W. Holt & Sons	890 0		

LONDON.—For warehouse, &c., at 88 and 90, Kingsland-road, for Messrs. J. Darnell & Son. Mr. T. N. Laslett, architect:—

Balaam Bros.	£4,530	Holloway Bros.	£4,033
Higgs & Hill	4,460	Grover & Son	3,992
Perry & Co.	4,182	Kirk & Randall	3,968
Patman & Fotheringham	4,179	W. Shurmur	3,933
Lovatt	4,171	Jarvis & Son	3,887
S. Perry	4,167	Greenwood	

LONDON.—For the supply and fixing of ten boilers at the Crossness pumping station, for the London County Council :—

J. & W. Baslow	£7,799 17 6	Spurr, Inman, & Co., Ltd.	£6,270 0 0
J. Thompson	7,500 0 0	W.R. Renshaw & Co.	6,233 0 0
Robey Bros	7,440 0 0	Leeds and Bradford Boiler Co., Ltd.	5,956 0 0
Oldham Boiler Works Company, Ltd.	7,150 0 0	Yates & Thom	5,717 0 0
W. Wilson & Co.	7,104 0 0	J. Fraser & Son	5,716 0 0
J. Whitehouse	6,850 0 0	H. T. Danks, Ltd.	5,700 0 0
D. Adamson & Co.	6,820 0 0	Tetlow Bros.	5,395 0 0
V. Coates & Co., Ltd.	6,500 0 0	E. Danks	5,385 0 0
R. Taylor & Sons	6,447 0 0		

LONDON.—For reconstructing corridors, staircases, and partitions, "Three Nuns," Aldgate, for Mr. J. W. Galton. Mr. C. J. C. Pawley, architect :—

Green & Co.	£1,158	Redhouse	£920
Spencer & Co.	1,075	Barnum & Roper	615
A. Hood	922		

LONDON.—Accepted for fittings to saloon bar at "The Unicorn," Shoreditch, for Mr. J. W. Galton. Mr. R. A. Lewcock, architect :—
A. Hood £1,250
[No competition.]

LONDON.—For sanitary works at Stepney Union, for the Guardians of the Poor. Mr. G. E. Holman, architect :—

W. Shurmur	£2,492	J. White & Son	£2,313
W. G. Holland	2,473	A. Coles	2,328
Atherton & Dolman	2,383	Wales & Co.	2,300

LONDON.—For builing new shops with flats over in Basil-street, Chelsea, for the Directors of Harrod's Stores Company, Limited. Mr. C. W. Stephens, architect, 51A, Hans-road, London, S.W. Mr. W. H. Elsmore, surveyor, Castlenau, Barnes, S.W. :—

Leslie & Co.	£84,547	Patman & Fotheringham	£82,625
Stephens, Bastow, & Co., Ltd.	84,500	Foster & Dicksee	81,125
J. Smith & Son	83,727	Allen & Sons *	80,365
Martin Wells & Co.	83,000	Holliday & Greenwood	77,484

* Accepted over lowest in respect of time.

LONDON.—For alterations at No. 244, King's-road, Chelsea, for the Borough of Chelsea Permanent Building Society. Messrs. Wheeler & Son, surveyors, 189, Fulham-road, South Kensington :—

Wade	£219 8	Burrell	£187 0
Jesson	206 0	Ashcroft, Battersea*	183 0
Bradley	195 10		

* Accepted.

LONDON.—For drainage works, Ely-place. Mr. A. M. Hiscocks architect and surveyor, Southwark :—

Buckridge Bros.	£487 0 0	H. Cox	£339 0 0
W. & T. Cooper	463 12 6	Jones & Fields	328 3 10
W. Coates	441 0 0	Williamson & Sons	325 0 0
Coulsill Bros.	385 0 0	T. Adams	307 0 0
Fry Bros.	374 0 0	W. Wady	299 0 0
W. Nicholls	371 0 0	G. Carpenter	296 10 0
C. A Simmons	369 0 0	W. Pipe	266 9 0
W. Mills	359 0 0	W. T. Mangum	248 10 0

[Other tenders too late.]

LONDON.—For new warehouse at rear of 221, Mare-street, Hackney. Mr. H. W. Dobb, architect :—

Sargeant	£627	Monk	£537
N. Fortescue	596	Barratt & Power	497
W. Shurmur	549	Jarvis & Son	495

LONDON.—For proposed alterations, additions, and repairs at No. 42, King-street, Cheapside, E.C., for Messrs. Joseph I. Byers & Co. Mr. J. R. Manning, architect, Milkwood Estate Office, Herne Hill, S.E. :—

Battley, Son, & Holness	£2,077 0 0	Maple & Co.	£1,960 0 0
Holliday & Greenwood	2,077 0 0	W. Wallace & Co.	1,815 15 3

Heating Apparatus.

Maple & Co.	£184	Berry & Son	£143

MONMOUTH.—For alterations and additions, &c., to the National Schools, Monmouth. Mr. George E. Halliday, architect, 14, High-street, Cardiff. Mr. J. W. Rodger, surveyor, 14, High-street, Cardiff :—

Jones & Co.	£1,598 0	Lissaman	£1,225 0
Richards	1,537 0	Edwards	1,115 0
Roberts	1,523 8	Williams & Thomas	1,049 0
Wood & Son	1,500 6	Morgan	1,039 0
Forse	1,500 0	O. Parry, Monmouth *	999 0
Perkins	1,375 0	Mackie	993 0
King & Son	1,257 0	Taylor	977 0

* Accepted.

PENRHIWCEIBER (Wales).—For the erection of five houses and three shops. Mr. S. Rooney, architect, 9, Quay-street, Cardiff :—

John Griffiths	£2,040	W. Ellis	£1,880
C. Jenkins & Son, Porth *	1,925		

* Accepted.

WALTHAM CROSS.—For new library, &c., at Waltham Cross, for Lady Meux. Messrs. Marshall & Vickers, architects :—

J. Bentley	£1,417	Bell & Son	£1,234
W. Shurmur	1,386	Fairhead & Son	1,351

WEALDSTONE (Harrow).—For the erection of colour, lithographing, and printing works, for Messrs. David Allen & Sons. Mr. Fredk. G. Knight, architect. Quantities by Mr. F. R. Smith :—

John Mowlem & Co.	£23,828	Stimpson & Co.	20,780
Hall, Beddall, & Co	21,300	D. Charteris	20,702
Patman & Fotheringham	21,250	Allen & Sons	20,665
I. Dixon	21,143	Foster & Dicksee	20,575
Higgs & Hill	20,984	J. W. Falkner	20,329

TO CORRESPONDENTS.

H. D. (no easy method of such analysis exists ; but the proportion of cement may, roughly, be judged from the manner the whole sets. The best way is to supervise the proportions of lime and cement used in the first place, unless you are prepared for a scientific investigation).—T. W. (we cannot give an opinion without knowing the facts).

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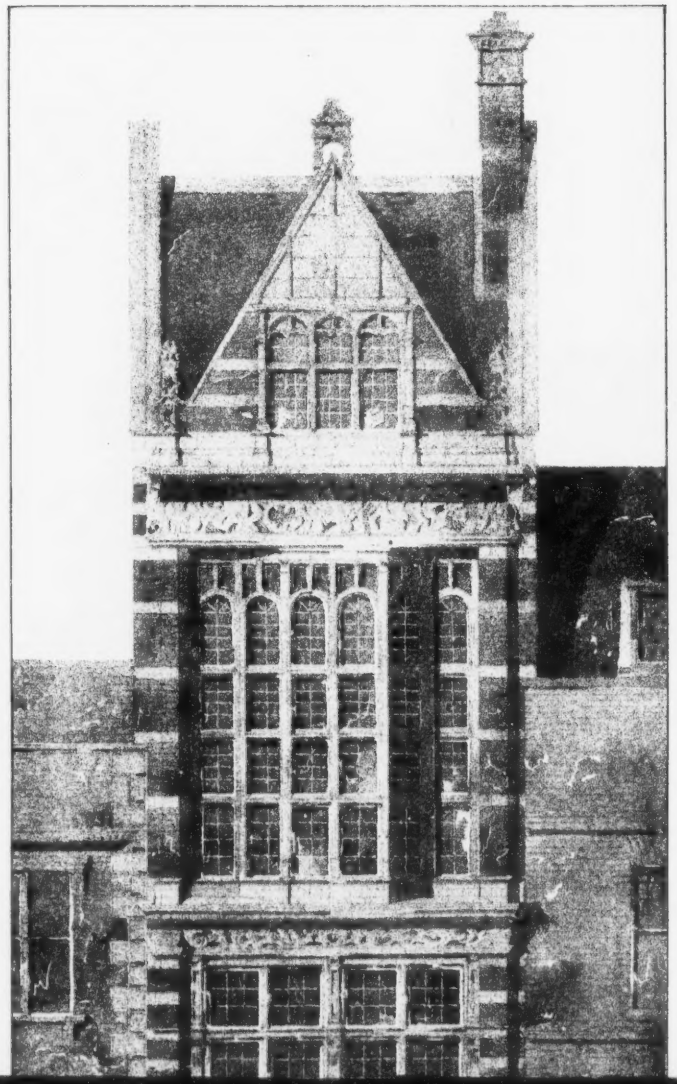
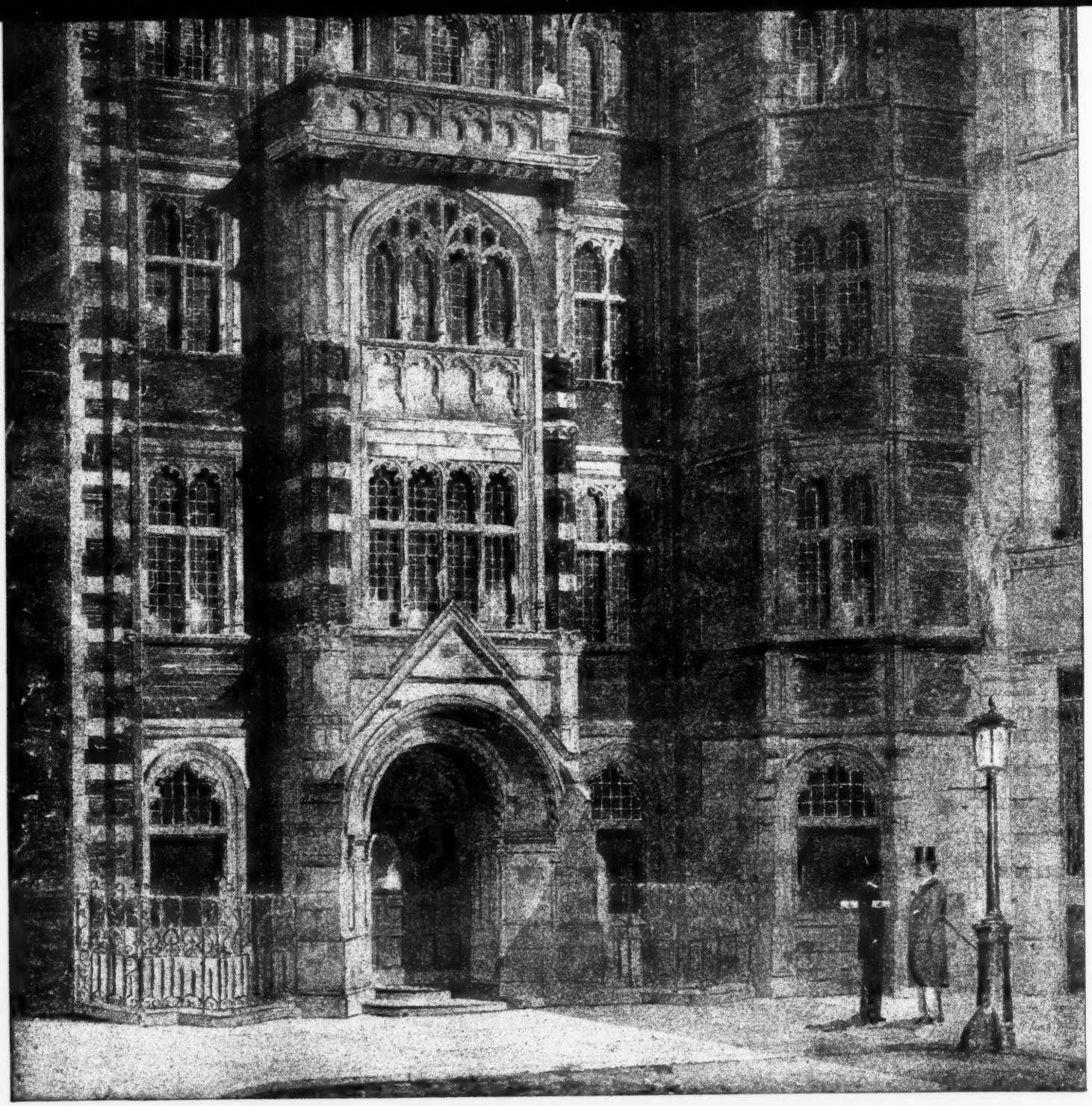
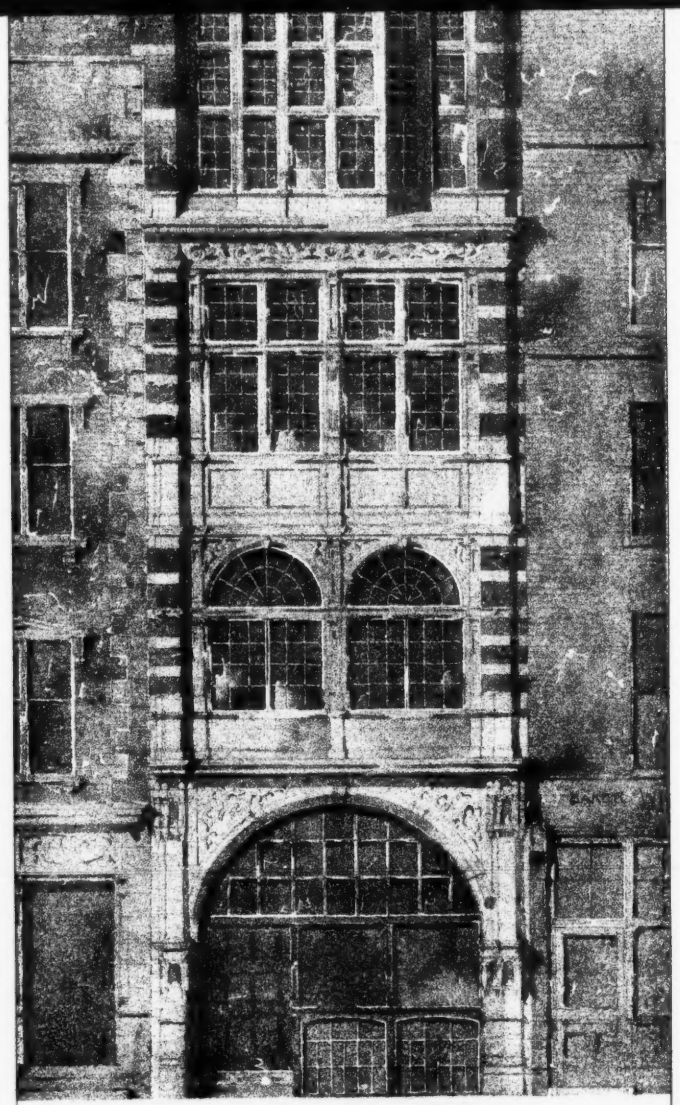
For the Ocean Accident and Guarantee Corporation Ltd

H. Huntly Gordon, Architect







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ARCHITECT

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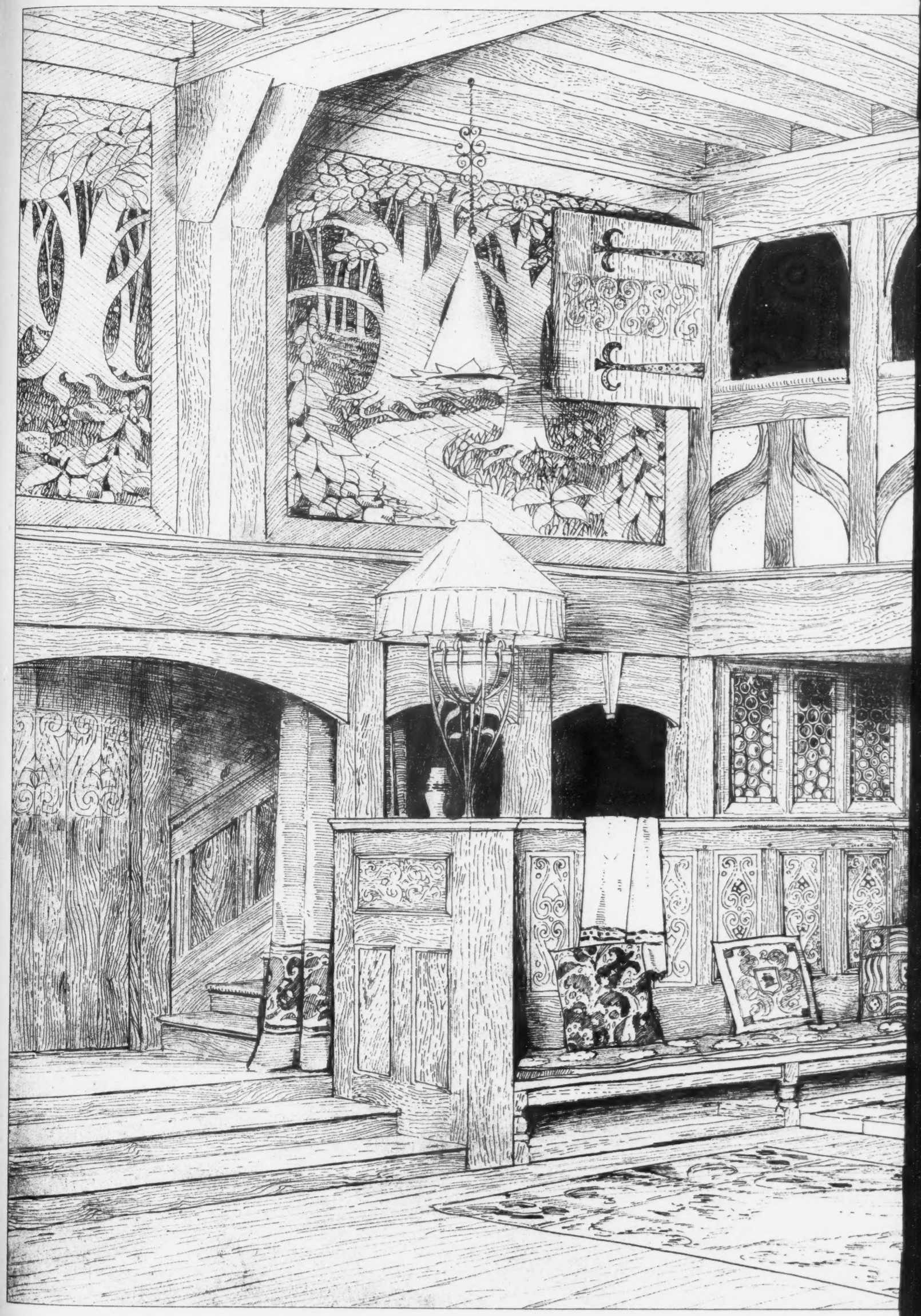
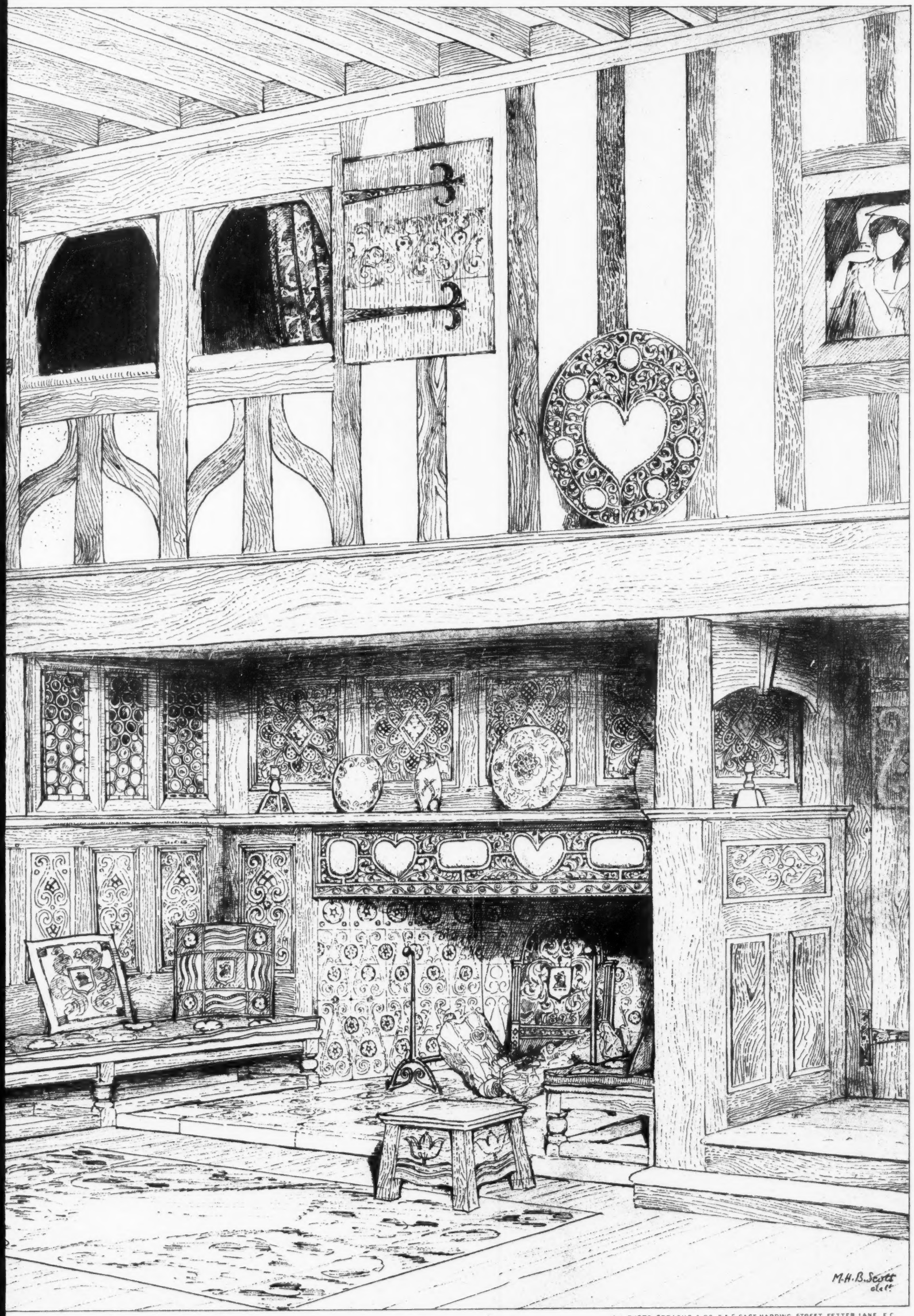


A COUNTRY HOUSE: THE HALL.—Messrs. Baillie Scott



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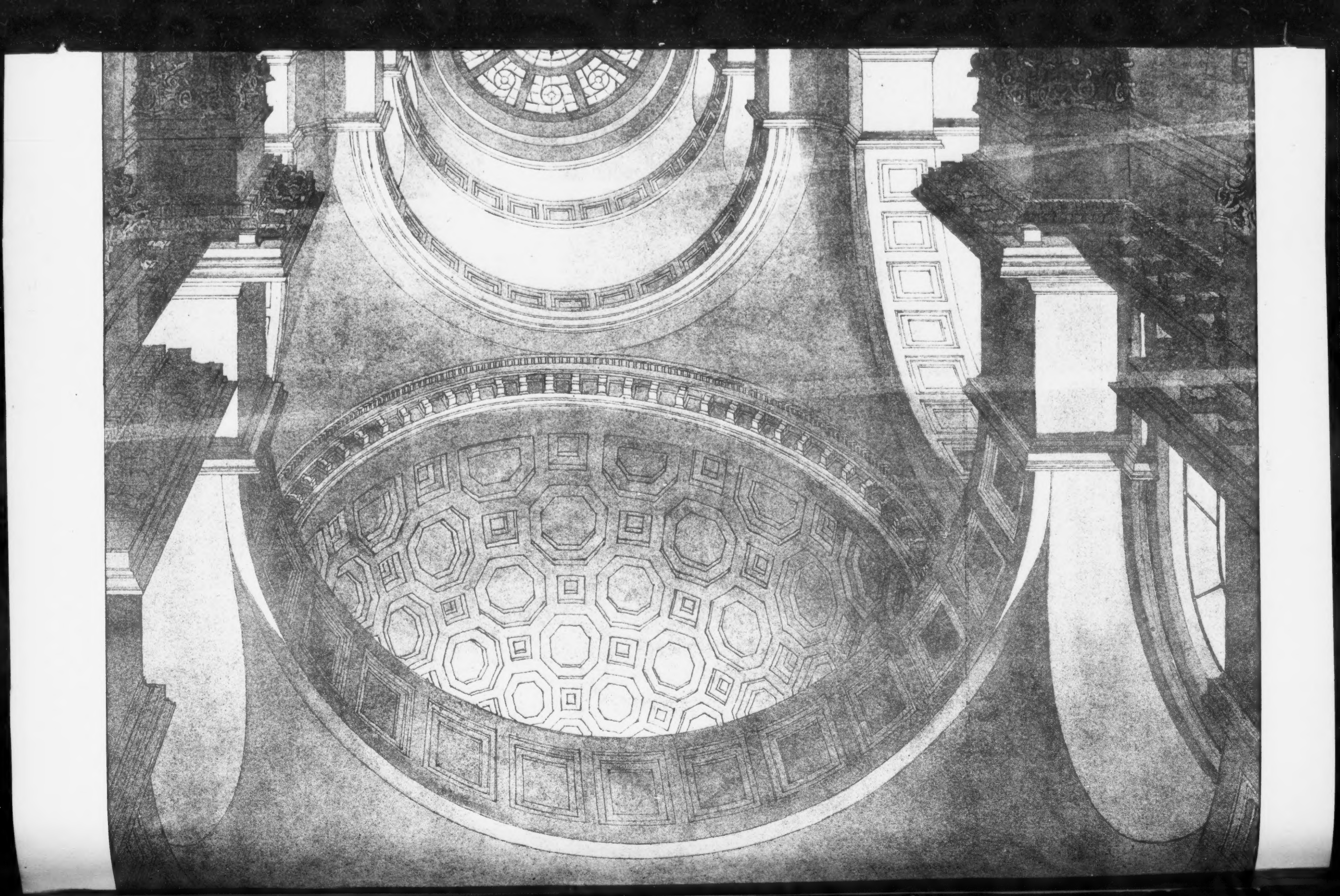
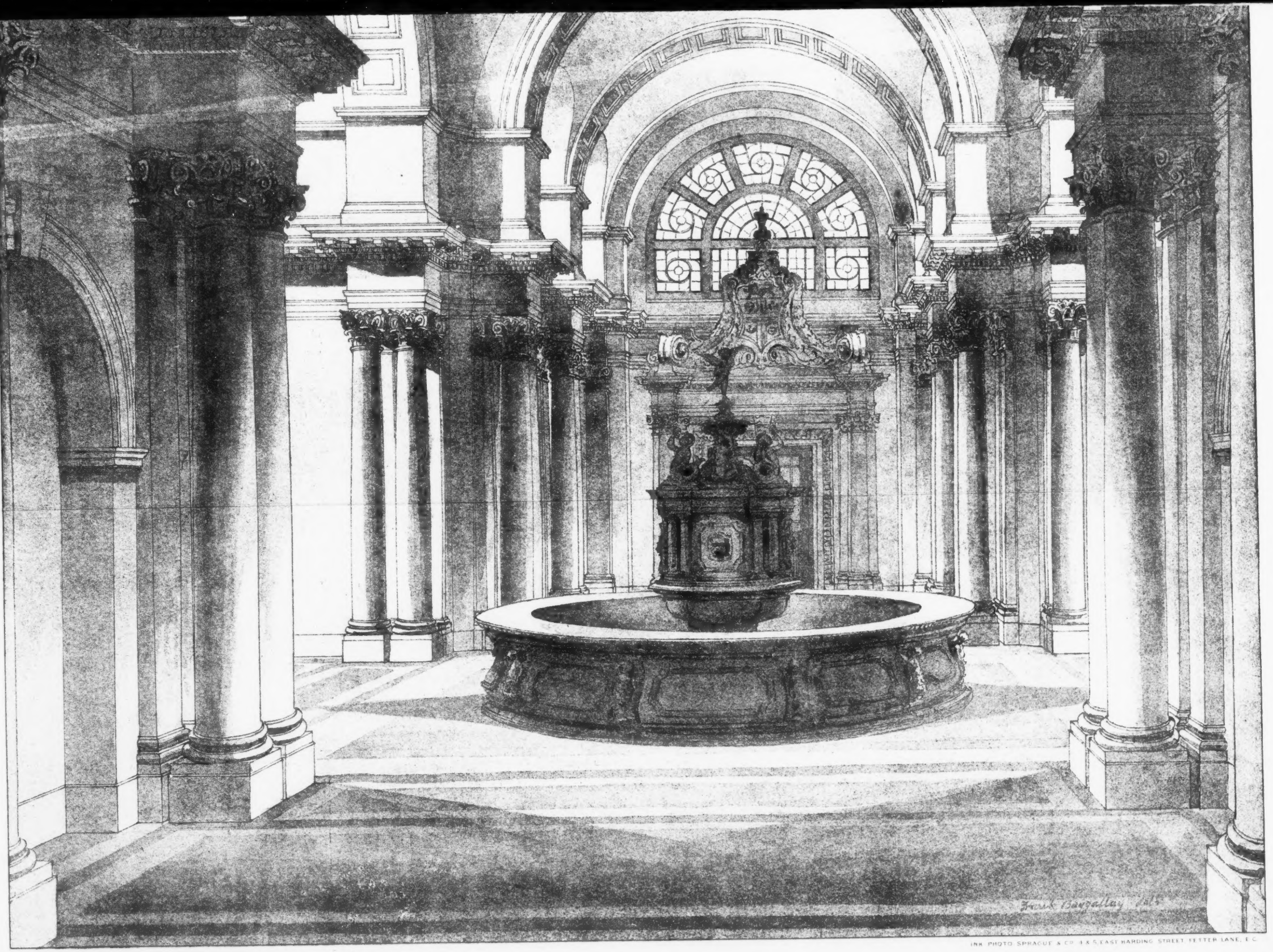
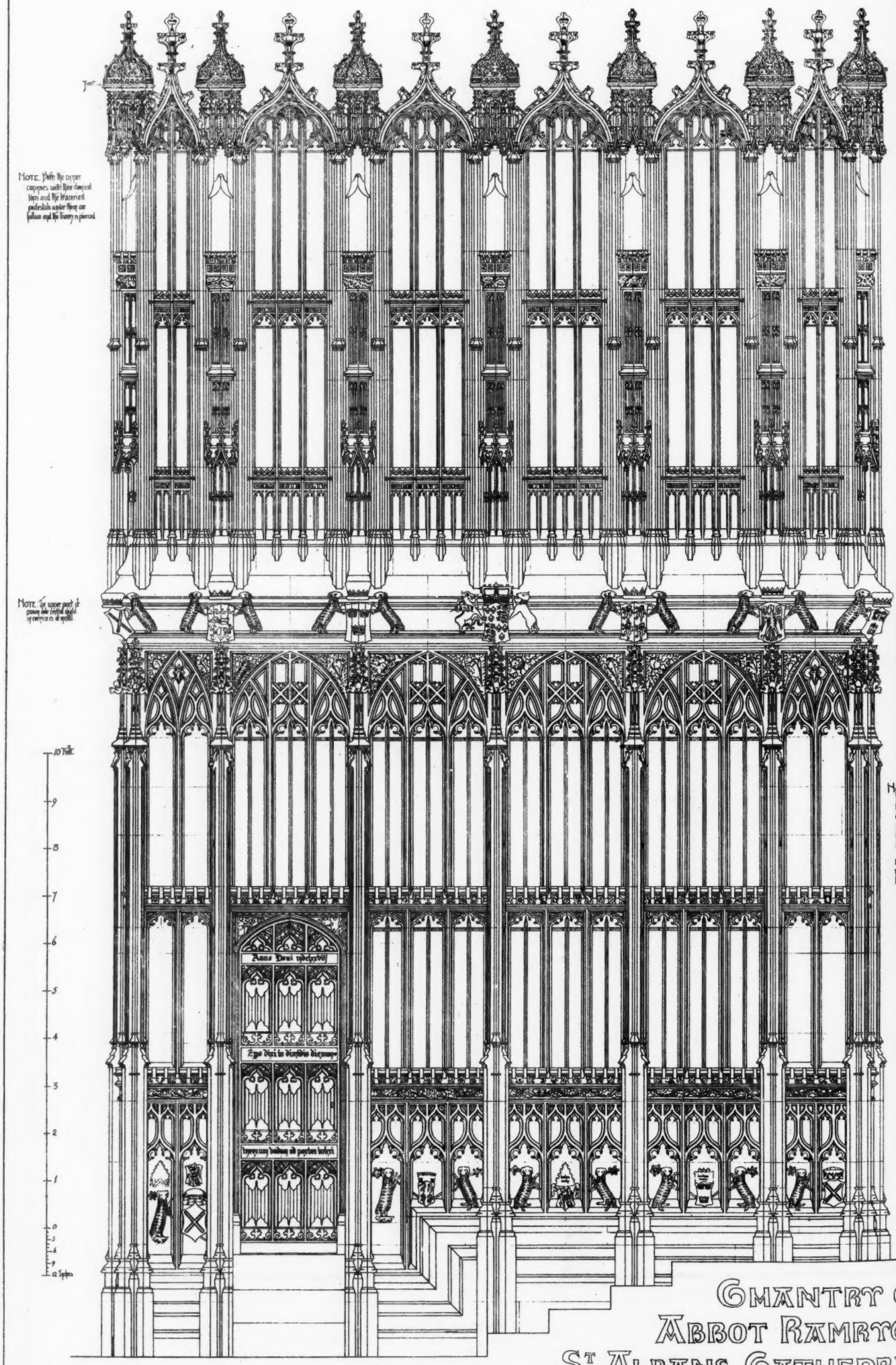
E HALL.—Messrs. Baillie Scott & Seton Morris, Architects.





CENTRAL HALL AND PUMP ROOM, NEW BATHS, HARROGATE.—Messrs. Baggallay & Bristowe, Architects


Note. Both the upper canopies with their damaged tops and the traceried pedestals under them are follow and the tracery is pierced.
Note. The upper part of groove like central shield is carried in at sides.
Note. The detailing moves circle to square to this angle, the cusping of arches and the carving being different, to the top is partly cut off by the gable moulding.
The small portion of masonry at sides left visible is a remnant of the end bays.
Anno Domi mccccxviii
Ego dixi in dimidio dierum
10 Feet
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ELEVATION TOWARDS SANCTVARY

GMANTRY OF ABBOT RAMRYGE S^T ALBANS GATMEDRAL

MEASURED & DRAWN BY P. RIDER SMITH.

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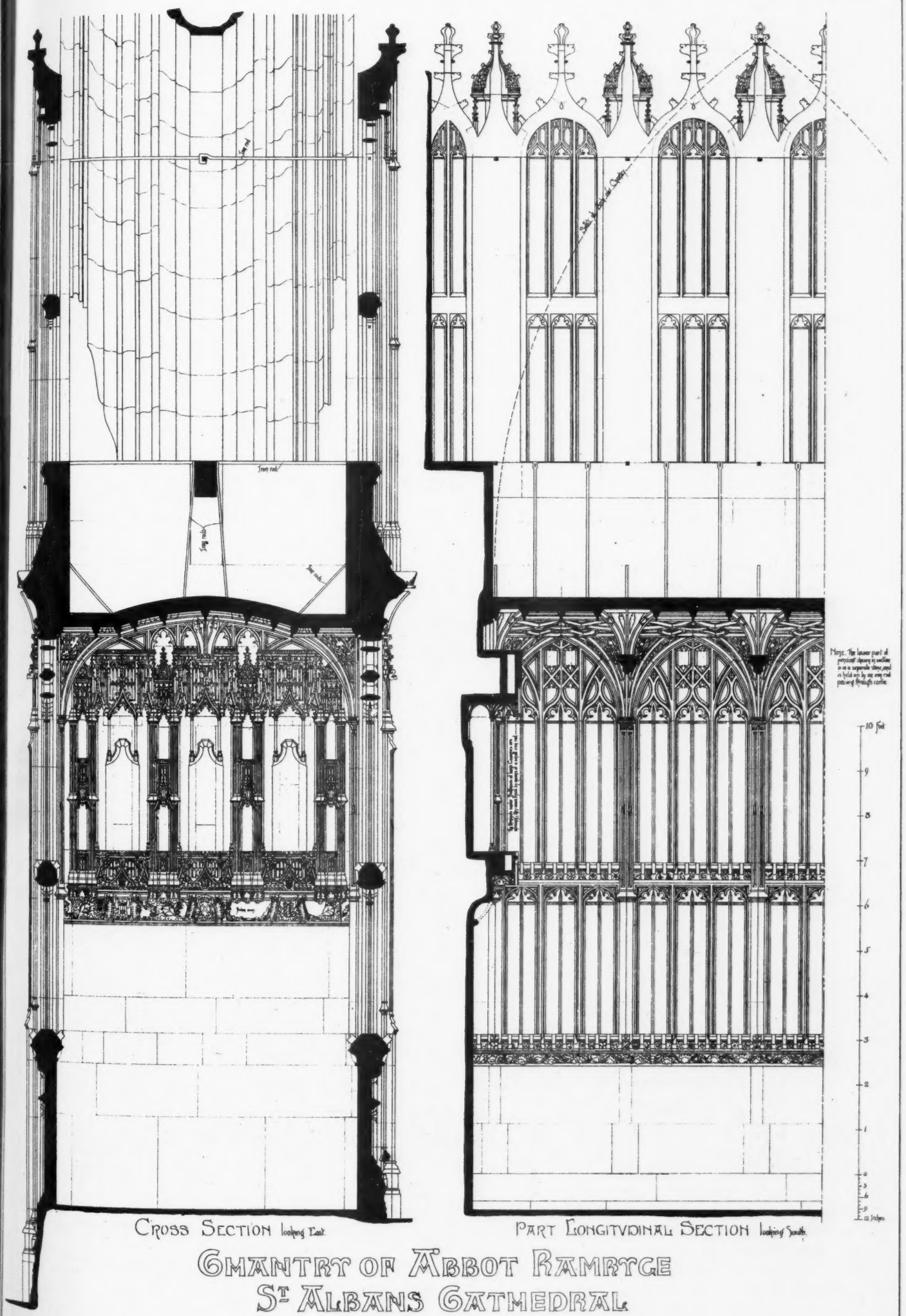
James Brooks Prize



CROSS SECTION looking East.

PART LONGITUDINAL SECTION looking South.

GMANTRY OF ABBOT RAMRYGE
ST ALBANS GATHEDRAL
MEASURED & DRAWN BY P. RIDER SMITH.

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